

DOE/OR/11-3037V2&D0

**RCRA Part B Permit Renewal
Application for the
Portsmouth Gaseous Diffusion Plant,
Piketon, Ohio**

US EPA RECORDS CENTER REGION 5



1006584

Volume 2.

**Appendix C-1 Documentation Supporting Characterization
Appendix C-2 Material Safety Data Sheets**

Date Issued — February 21, 2000

Prepared by
EQ Midwest, Inc.
Cincinnati, OH
under subcontract 23900-SC-SM002F

Prepared for the
U.S. Department of Energy
Office of Environmental Restoration and Waste Management

BECHTEL JACOBS COMPANY LLC
managing the
Environmental Management Activities at the
Portsmouth Gaseous Diffusion Plant

Bechtel Jacobs Company LLC
P.O. Box 900
Piketon, Ohio 45661

under contract DE-AC05-98OR22700
for the
U.S. DEPARTMENT OF ENERGY

This document has received the appropriate
reviews for release to the public.

Waste Stream Number: SW-10

Waste Stream Title: RCW/RHW System Wastes

W
4W

SW-10

✓

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

Analysis ID: 930202-036 Project: WMGD RFD Customer Sample ID: RFD-11138
Customer: WASTE MANAGEMENT Requisition Number: 000021
Date Sampled: 2-FEB-1993 Date Sample Received: 2-FEB-1993
Sampled By: B. KELLEY Date Sample Completed: 10-MAY-1993
Material Description: X333 CHROMATE WATER

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
	Uranium (Waste)	COMMENT			DK PEREZ	4-FEB-1993	NA
SW846-3051	Arsenic	3.1		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
	Barium	3.7		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
	Cadmium	1.8		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
	Chromium	37.9		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
	Lead	9.6		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
	Selenium	3.8 U		mg/Kg	AL SHULTZ	4-FEB-1993	93080068
SW846-7470	Mercury	0.01 UN		mg/Kg	EK GILBERT	15-FEB-1993	93080086
5	Silver	<2		mg/kg	EK GILBERT	15-APR-1993	93080210
-8080	PCB (TOTAL)	4.6		ug/ml	JN STRICKLAND	12-FEB-1993	93160044
TSD553-230	Gross Alpha Activity (Water)	20.1		pCi/mL	JJ SISLER	8-FEB-1993	93070176
	Gross Beta Activity (Water)	36.4		pCi/mL	JJ SISLER	8-FEB-1993	93070176
TSD553-380	Technetium (Waste)	J 6.0		pCi/mL	JJ SISLER	8-FEB-1993	93070175
TSD553-440	TOTAL URANIUM	93.5		ppm U	JD LITTERAL	22-FEB-1993	93070304

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
MERCURY	2	1.221	61.05
PCB (TOTAL)	1.19	0.9	75.63
SILVER	49.116	45.873	93.40

***** Comments from the Environmental and Industrial Hygiene Laboratory *****

Uranium analyzed by dept. 553.

Inorganic Data Reporting Qualifiers and Flags:
Concentration Qualifiers:

B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

lyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

J - Qualify data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

D. E. Boyd (Spectrochemistry/ICP Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

J. J. Williams (Organic Analytical Services)

Date Approved: 10-MAY-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 930202-036
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD-11138
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number: 000021
Date Sample Received: 2-FEB-1992
Date Sampled: 2-FEB-1993

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 8-FEB-1993
QA File Number: 93160046
Dilution Factor: .5
Analyst: PJ WARD

CAS		ug/ml	CAS		ug/ml
71-43-2	Benzene	140			
	2-Butanone (MEK)	20U			
56-23-5	Carbon Tetrachloride	0.01U			
108-90-7	Chlorobenzene	20U			
67-66-3	Chloroform	0.01U			
	p-Dichlorobenzene	0.03U			
107-06-2	1,2-Dichloroethane	0.25U			
75-35-4	1,1-Dichloroethene	0.01U			
127-18-4	Tetrachloroethene	0.01U			
79-01-6	Trichloroethene	0.01U			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: SW-1

Waste Stream Title: Laboratory Off-Specification Chemicals

Customer Smpl Id: VER46197001
c:X-04-WM BJC09825
Supproj Analyses: LIQUID
Customer: J A APPLGATE
COC#: 061114
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: LIQUID
Protocol: RCRA
Status: APPROVED
Location:

Sampled: 08/27/98 10:25:00
Received: 08/27/98 13:44:35
Needed: 10/01/98 23:59:00
Approved: 09/30/98 17:05:59

SW-1

Analy Meth: SW846-3015 QC Batch: Test: 3015PREP Rpt Basis: none Date Approved
Prep Meth: Analyzed: 09/11/98 00:00:00 K A DAYS Approver: D K PEREZ 09/25/98 14:37

Analy Meth: SW846-6010A QC Batch: Test: 6010AMETALS2 Rpt Basis: none Date Approved
Prep Meth: SW846-3015 Analyzed: 09/12/98 00:00:00 T E SHOOK Approver: D K PEREZ 09/30/98 16:50

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Arsenic	5880		ug/L	NU			20		
Barium	280		ug/L	U			20		
Cadmium	5670		ug/L				20		
Chromium	4080		ug/L				20		
Lead	5880		ug/L	NU			20		
Selenium	6760		ug/L	U			20		
Silver	820		ug/L	U			20		

Comments: QC File: 98080745

Analy Meth: SW846-1010 QC Batch: Test: FLASHPOINT Rpt Basis: none Date Approved
Prep Meth: Analyzed: 09/02/98 00:00:00 L E WILLIAMS Approver: D K PEREZ 09/30/98 17:04

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Flash Point Closed Cup	>80		deg C				1		

Comments: QC File: 98CS0215

FLASH POINT DUPLICATE READ >80 oC

EPA Qualifiers:

N - Sample spike recovery not within control limits.

U - Analyte analyzed for but undetected. Analyte result was below the Instrument
Detection Limit (IDL).

Analy Meth: SW846-3520 QC Batch: QC98265015 Test: ORGEXT-SVOC Rpt Basis: none Date Approved
Prep Meth: Analyzed: 09/08/98 00:00:00 D K SCAGGS Approver: C J VANMETER 09/24/98 16:46

Comments: Method SW846-3520B

The original pH of this sample was -2, so only a small amount of acid was added for the first extraction. During the addition of the base, heat and foaming were observed in the extraction column due to the large amount of base needed to achieve a pH >11. The top layer of liquid in the extraction column was a brownish color. The bottom layer of liquid in the extraction column was mostly a light colored precipitate.

The sample was extracted the second time due to the problems noted above

during the basic extraction, however, the same results were observed. The QC spike for this sample was extracted only once.

The holding time for this sample was considered as 14 days because the matrix was a waste liquid.

Analy Meth: SW846-8270B	QC Batch: QC98266000 Test: SVOC	Rpt Basis: none	Date Approved
Prep Meth: SW846-3520	Analyzed: 09/17/98 00:00:00 R J WAWRO	Approver: C J VANMETER	09/24/98 16:48

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	100		ug/L	U		100	1	P	
1,2-Dichlorobenzene	100		ug/L	U		100	1	P	
1,3-Dichlorobenzene	100		ug/L	U		100	1	P	
1,4-Dichlorobenzene	100		ug/L	U		100	1	P	
2,4,5-Trichlorophenol	100		ug/L	U		100	1	P	
2,4,6-Trichlorophenol	100		ug/L	U		100	1	P	
2,4-Dichlorophenol	100		ug/L	U		100	1	P	
2,4-Dimethylphenol	100		ug/L	U		100	1	P	
2,4-Dinitrophenol	500		ug/L	JU		500	1	P	
2,4-Dinitrotoluene	100		ug/L	U		100	1	P	
2,6-Dinitrotoluene	100		ug/L	U		100	1	P	
2-Chloronaphthalene	100		ug/L	U		100	1	P	
2-Chlorophenol	100		ug/L	U		100	1	P	
2-Methyl-4,6-dinitrophenol	500		ug/L	U		500	1	P	
ylphenol	100		ug/L	U		100	1	P	
rophenol	100		ug/L	U		100	1	P	
3(4)-Methylphenol	100		ug/L	U		100	1	P	
4-Bromophenyl phenyl ether	100		ug/L	U		100	1	P	
4-Chloro-3-methylphenol	200		ug/L	U		200	1	P	
4-Chlorophenylphenyl ether	100		ug/L	U		100	1	P	
4-Nitrophenol	500		ug/L	U		500	1	P	
Acenaphthene	100		ug/L	U		100	1	P	
Acenaphthylene	100		ug/L	U		100	1	P	
Anthracene	100		ug/L	U		100	1	P	
Benzo(a)anthracene	100		ug/L	U		100	1	P	
Benzo(a)pyrene	100		ug/L	U		100	1	P	
Benzo(b)fluoranthene	100		ug/L	U		100	1	P	
Benzo(ghi)perylene	100		ug/L	JU		100	1	P	
Benzo(k)fluoranthene	100		ug/L	U		100	1	P	
Bis(2-chloroethoxy)methane	100		ug/L	U		100	1	P	
Bis(2-chloroethyl) ether	100		ug/L	U		100	1	P	
Bis(2-chloroisopropyl) ether	100		ug/L	U		100	1	P	
Bis(2-ethylhexyl)phthalate	100		ug/L	U		100	1	P	
Butylbenzylphthalate	100		ug/L	U		100	1	P	
Chrysene	100		ug/L	U		100	1	P	
Di-n-butylphthalate	100		ug/L	U		100	1	P	
Di-n-octylphthlate	100		ug/L	U		100	1	P	
Dibenz(a,h)anthracene	100		ug/L	JU		100	1	P	
Diethylphthalate	100		ug/L	U		100	1	P	
-thylphthalate	100		ug/L	U		100	1	P	

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
nyldiazene	100		ug/L	U		100	1	P	
Fluoranthene	100		ug/L	U		100	1	P	
Fluorene	100		ug/L	U		100	1	P	
Hexachlorobenzene	100		ug/L	U		100	1	P	
Hexachlorobutadiene	100		ug/L	U		100	1	P	
Hexachlorocyclopentadiene	NR		ug/L				1	P	
Hexachloroethane	100		ug/L	U		100	1	P	
Indeno(1,2,3-cd)pyrene	100		ug/L	JU		100	1	P	
Isophorone	100		ug/L	U		100	1	P	
N-Nitroso-di-n-propylamine	100		ug/L	U		100	1	P	
N-Nitrosodimethylamine	100		ug/L	U		100	1	P	
N-Nitrosodiphenylamine	100		ug/L	U		100	1	P	
Naphthalene	100		ug/L	U		100	1	P	
Nitrobenzene	100		ug/L	U		100	1	P	
Pentachlorophenol	500		ug/L	U		500	1	P	
Phenanthrene	100		ug/L	U		100	1	P	
Phenol	150		ug/L			100	1	P	
Pyrene	100		ug/L	U		100	1	P	
Pyridine	100		ug/L	U		100	1	P	

Comments:

There were 2 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(22%) and hexachlorocyclopentadiene(23%).

Three compounds failed established recovery criteria of 30% in the continuing calibration check and are also qualified as estimates, 'J'. These compounds were indeno(1,2,3-cd)pyrene(44%), dibenzo(a,h)anthracene(60%) and benzo(g,h,i)perylene(39%).

Hexachlorocyclopentadiene is not reported (NR) because of continuing difficulties in the liquid/liquid extraction procedure for this compound. Recoveries of hexachlorocyclopentadiene from laboratory control and matrix spiked samples have historically been very poor.

Analy Meth:SW846-8260A

QC Batch:QC98252002 Test:VOA

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:09/02/98 00:00:00 B D FUHR

Approver: C J VANMETER

09/10/98 15:09

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	20		ug/L	U	C	20	10		
1,1,2,2-Tetrachloroethane	20		ug/L	U	C	20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	20		ug/L	U	C	20	10		
1,1,2-Trichloroethane	20		ug/L	U	C	20	10		
1,1-Dichloroethane	20		ug/L	U	C	20	10		
-Dichloroethene	20		ug/L	U	C	20	10		

VER46197001

Portsmouth Analytical Laboratory

X982390029

Official Report

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1,2-tetrachloro-1,1,2,2-tetrafluoroethane	40		ug/L	U	C	40	10		
1,2-Dichlorobenzene	20		ug/L	U	C	20	10		
1,2-Dichloroethane	20		ug/L	U	C	20	10		
1,2-Dimethylbenzene	20		ug/L	U	C	20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/L	U	C	20	10		
1,3-Dichlorobenzene	20		ug/L	U	C	20	10		
1,4-Dichlorobenzene	20		ug/L	U	C	20	10		
2-Butanone	500		ug/L	JU	C	500	10		
4-Methyl-2-pentanone	500		ug/L	U	C	500	10		
Acetone	3900		ug/L		C	500	10		
Benzene	20		ug/L	U	C	20	10		
Bromodichloromethane	20		ug/L	U	C	20	10		
Bromoform	20		ug/L	U	C	20	10		
Bromomethane	40		ug/L	JU	C	40	10		
Carbon disulfide	20		ug/L	U	C	20	10		
Carbon tetrachloride	20		ug/L	U	C	20	10		
Chlorobenzene	20		ug/L	U	C	20	10		
Chloroethane	40		ug/L	U	C	40	10		
Chloroform	20		ug/L	U	C	20	10		
Chloromethane	40		ug/L	U	C	40	10		
Dibromochloromethane	20		ug/L	U	C	20	10		
Ethylbenzene	20		ug/L	U	C	20	10		
Methylene chloride	20		ug/L	U	C	20	10		
Tetrachloroethene	20		ug/L	U	C	20	10		
Toluene	20		ug/L	U	C	20	10		
1,1-Dichloroethene	20		ug/L	U	C	20	10		
1,1-Difluoroethane	40		ug/L	U	C	40	10		
Vinyl chloride	10		ug/L	U	C	10	10		
cis-1,2-Dichloroethene	20		ug/L	U	C	20	10		
trans-1,2-Dichloroethene	20		ug/L	U	C	20	10		

Comments: Method SW846-8260A

Bromomethane (35%) and 2-Butanone (55%) failed to meet the method criteria of <25%D in the daily continuing calibration check and are reported as estimated values "J."

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth:PORTS-OA97333006

QC Batch:QC98266003 Test:AB-ACT-GPC

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:09/21/98 00:00:00 J P BREWSTER

Approver: B W SHORT

09/24/98 15:41

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Alpha activity	<3.1		pCi/ml	J			3.1	
Beta activity	7.3		pCi/ml				5.9	

Meth:PORTS-XP4-TS-RL7380 QC Batch:QC98266001 Test:TC99-ACT-LS Rpt Basis:none Date Approved
Prep Meth: Analyzed:09/22/98 00:00:00 J P BREWSTER Approver: B W SHORT 09/24/98 15:41

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	<1.1		pCi/ml			1.1	

Analy Meth:PORTS-XP4-TS-RL7720ug QC Batch:QC98273007 Test:TOTAL-U-AS Rpt Basis:none Date Approved
Prep Meth: Analyzed:09/23/98 00:00:00 R J ANDRE Approver: B W SHORT 09/30/98 14:32

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	0.018		ug/ml				
Uranium-235	NA		wt %	X			

EPA Qualifiers:

J - Indicates an estimated value.

- Method SW846-5030A "Purge-and-Trap"
- X - U-235 was below detection limits.

Waste Stream Number: SW-2

Waste Stream Title: Rags, Gloves, Wipes, Absorbent Material, etc.

Customer Smpl Id: VER47726001
t:X-04-WM BJC09825
Analyses: SOLID
Customer: J A APPEGATE
COC#: 059686
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: SOLID
Protocol: RCRA
Status: APPROVED
Location:

Sampled: 06/10/98 13:40:00
Received: 06/11/98 13:07:37
Needed: 07/16/98 23:59:00
Approved: 07/16/98 17:56:28

Analy Meth: SW846-3050A	QC Batch:	Test: 3050APREP	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 06/23/98 00:00:00	K A DAYS	Approver: D K PEREZ	07/16/98 14:08

Analy Meth: SW846-6010A	QC Batch:	Test: 6010AMETALS5	Rpt Basis: none	Date Approved
Prep Meth: SW846-3050A	Analyzed: 06/25/98 00:00:00	T E SHOOK	Approver: D K PEREZ	07/16/98 14:06

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	44.5		mg/kg	B			1		
Antimony	80.8		mg/kg	BN			1		
Arsenic	3.4		mg/kg	B			1		N
Barium	152		mg/kg	B			1		Y
Beryllium	0.15		mg/kg	B			1		
Cadmium	0.23		mg/kg	B			1		N
Calcium	2710		mg/kg	B			1		
Chromium	79.5		mg/kg	N			1		Y
t	5.4		mg/kg	B			1		
r	517		mg/kg				1		
Iron	4800		mg/kg	B			1		
Lead	41.0		mg/kg	B			1		Y
Magnesium	388		mg/kg	B			1		
Manganese	39.7		mg/kg	BJ			1		
Molybdenum	2.7		mg/kg	B			1		
Nickel	7.2		mg/kg	B			1		
Potassium	38.5		mg/kg	JU			1		
Selenium	3.3		mg/kg	U			1		Y
Silver	2.6		mg/kg	B			1		N
Sodium	98.1		mg/kg	B			1		
Thallium	4.3		mg/kg	BN			1		
Vanadium	0.37		mg/kg	B			1		
Zinc	383		mg/kg				1		

Comments: QC File: 98080486

K and Mn qualified as estimates due to interference check not meeting acceptance limits.

Analyte Meth: SW846-7470A	QC Batch:	Test: HG7470A	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 06/18/98 00:00:00 K A DAYS		Approver: D K PEREZ	06/19/98

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	0.034		mg/kg	N		0.025	1		Y

Comments: QC File: 98080472

EPA Qualifiers:

- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth: SW846-3540	QC Batch: QC98194007	Test: ORGEXT-SVOC	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 06/23/98 00:00:00 D K SCAGGS		Approver: C J VANMETER	07/16/98 17:52

Comments: Method SW846-3540B: Semi-volatile prep

This sample matrix consisted of cloth rags and cloth gloves.

A smaller sample weight was used to reduce sample matrix interference.

Foaming was observed during the first phase of concentration. The extract from this phase was dark and oil-like in appearance.

A nitrogen purge was used for the final phase of concentration and the final volume was 10ml.

Analy Meth: SW846-8270B	QC Batch: QC98194009	Test: SVOC	Rpt Basis: none	Date Approved
Prep Meth: SW846-3540	Analyzed: 07/07/98 00:00:00 R J WAWRO		Approver: C J VANMETER	07/16/98 17:54

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	12000		ug/kg	U		12000	1		
1,2-Dichlorobenzene	12000		ug/kg	U		12000	1		
1,3-Dichlorobenzene	12000		ug/kg	U		12000	1		
1,4-Dichlorobenzene	12000		ug/kg	U		12000	1		
2,4,5-Trichlorophenol	12000		ug/kg	U		12000	1		
2,4,6-Trichlorophenol	12000		ug/kg	U		12000	1		
2,4-Dichlorophenol	12000		ug/kg	U		12000	1		
2,4-Dimethylphenol	12000		ug/kg	U		12000	1		
2,4-Dinitrophenol	60000		ug/kg	JU		60000	1		
2,4-Dinitrotoluene	12000		ug/kg	U		12000	1		
2,6-Dinitrotoluene	12000		ug/kg	U		12000	1		
2-Chloronaphthalene	12000		ug/kg	U		12000	1		
2-Chlorophenol	12000		ug/kg	JU		12000	1		
2-Methyl-4,6-dinitrophenol	60000		ug/kg	JU		60000	1		
2-Methylphenol	12000		ug/kg	U		12000	1		
2-Nitrophenol	12000		ug/kg	U		12000	1		
3-Methylphenol	12000		ug/kg	U		12000	1		

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
mophenyl phenyl ether	12000		ug/kg	U		12000	1		
oro-3-methylphenol	24000		ug/kg	U		24000	1		
4-Chlorophenylphenyl ether	12000		ug/kg	U		12000	1		
4-Nitrophenol	60000		ug/kg	JU		60000	1		
Acenaphthene	12000		ug/kg	U		12000	1		
Acenaphthylene	12000		ug/kg	U		12000	1		
Anthracene	20000		ug/kg	J		12000	1		
Benzo(a)anthracene	31000		ug/kg	J		12000	1		
Benzo(a)pyrene	29000		ug/kg	J		12000	1		
Benzo(b)fluoranthene	39000		ug/kg	J		12000	1		
Benzo(ghi)perylene	22000		ug/kg	J		12000	1		
Benzo(k)fluoranthene	15000		ug/kg	J		12000	1		
Bis(2-chloroethoxy)methane	12000		ug/kg	U		12000	1		
Bis(2-chloroethyl) ether	12000		ug/kg	U		12000	1		
Bis(2-chloroisopropyl) ether	12000		ug/kg	U		12000	1		
Bis(2-ethylhexyl)phthalate	22000		ug/kg	J		12000	1		
Butylbenzylphthalate	12000		ug/kg	U		12000	1		
Chrysene	29000		ug/kg	J		12000	1		
Di-n-butylphthalate	12000		ug/kg	U		12000	1		
Di-n-octylphthlate	12000		ug/kg	U		12000	1		
Dibenz(a,h)anthracene	12000		ug/kg	U		12000	1		
Diethylphthalate	12000		ug/kg	U		12000	1		
Dimethylphthalate	12000		ug/kg	U		12000	1		
Diphenyldiazene	12000		ug/kg	U		12000	1		
Fluoranthene	63000		ug/kg	J		12000	1		
ene	12000		ug/kg	U		12000	1		
Chlorobenzene	12000		ug/kg	U		12000	1		
Hexachlorobutadiene	12000		ug/kg	U		12000	1		
Hexachlorocyclopentadiene	12000		ug/kg	J		12000	1		
Hexachloroethane	12000		ug/kg	U		12000	1		
Indeno(1,2,3-cd)pyrene	22000		ug/kg	J		12000	1		
Isophorone	12000		ug/kg	U		12000	1		
N-Nitroso-di-n-propylamine	12000		ug/kg	U		12000	1		
N-Nitrosodimethylamine	12000		ug/kg	U		12000	1		
N-Nitrosodiphenylamine	12000		ug/kg	U		12000	1		
Naphthalene	85000		ug/kg	J		12000	1		
Nitrobenzene	12000		ug/kg	U		12000	1		
Pentachlorophenol	60000		ug/kg	U		60000	1		
Phenanthrene	68000		ug/kg	J		12000	1		
Phenol	12000		ug/kg	JU		12000	1		
Pyrene	60000		ug/kg	J		12000	1		
Pyridine	12000		ug/kg	U		12000	1		

Comments: There was a high level of methylene chloride extractable compounds present in this sample and the final extract concentrate volume was 10mL. The GC/MS analysis of this dark black concentrate contained an intense broad band of tentatively identified compound (TICs) that eluted from 9 to 15min. This band of TICs coeluted with some of the target analytes and surrogates. The base/neutral surrogate, nitrobenzene-d5, had high recoveries in the sample as well as in the matrix spiked sample.

Recovery of phenol and 2-chlorophenol in the matrix spiked sample was below PORTS established criteria and are qualified as estimates, 'J'.

The broad TIC band was primarily composed of aliphatic alkane

compounds.

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(30%), 4,6-dinitro-2-methylphenol(20%), and 4-nitrophenol(19%).

Hexachlorocyclopentadiene recovery was below PORTS established criteria in the MS sample as well as the LCS extracted with this batch and is reported as an estimated value "J".

Sample homogeneity may have been a problem as indicated by poor recovery of the target hits of a group of PAH compounds in a spiked aliquot of this sample. These poor recoveries led to the estimation of the PAH compounds that were detected.

Analy Meth:SW846-8260A		QC Batch:QC98176003 Test:VOA			Rpt Basis:none			Date Approved	
Prep Meth:		Analyzed:06/23/98 00:00:00 J N STRICKLAND			Approver: C J VANMETER			07/07/98 16:21	
Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	20000		ug/kg	U		20000	10000		
1,1,2,2-Tetrachloroethane	20000		ug/kg	U		20000	10000		
1,1,2-Trichloro-1,2,2-trifluoroethane	20000		ug/kg	U		20000	10000		
1,1,2-Trichloroethane	20000		ug/kg	U		20000	10000		
1,1-Dichloroethane	20000		ug/kg	U		20000	10000		
1,1,1-Trichloroethene	20000		ug/kg	U		20000	10000		
1,1,1,2,2-Pentachloro-1,1,2,2-tetrafluoroethane	40000		ug/kg	U		40000	10000		
1,2-Dichlorobenzene	20000		ug/kg	U		20000	10000		
1,2-Dichloroethane	20000		ug/kg	U		20000	10000		
1,2-Dimethylbenzene	29000		ug/kg			20000	10000		
1,3 (1,4)-Dimethylbenzene	74000		ug/kg			20000	10000		
1,3-Dichlorobenzene	20000		ug/kg	U		20000	10000		
1,4-Dichlorobenzene	20000		ug/kg	U		20000	10000		
2-Butanone	500000		ug/kg	U		500000	10000		
4-Methyl-2-pentanone	500000		ug/kg	U		500000	10000		
Acetone	500000		ug/kg	U		500000	10000		
Benzene	20000		ug/kg	U		20000	10000		
Bromodichloromethane	20000		ug/kg	U		20000	10000		
Bromoform	20000		ug/kg	U		20000	10000		
Bromomethane	40000		ug/kg	U		40000	10000		
Carbon disulfide	20000		ug/kg	U		20000	10000		
Carbon tetrachloride	20000		ug/kg	U		20000	10000		
Chlorobenzene	20000		ug/kg	U		20000	10000		
Chloroethane	40000		ug/kg	U		40000	10000		
Chloroform	20000		ug/kg	U		20000	10000		
Chloromethane	40000		ug/kg	U		40000	10000		
Dibromochloromethane	20000		ug/kg	U		20000	10000		
Ethylbenzene	21000		ug/kg			20000	10000		
Methylene chloride	20000		ug/kg	U		20000	10000		
Tetrachloroethene	20000		ug/kg	U		20000	10000		
Hexachlorocyclopentadiene	190000		ug/kg	J		20000	10000		

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
loroethene	20000		ug/kg	U		20000	10000		
chlorofluoromethane	40000		ug/kg	U		40000	10000		
Vinyl chloride	10000		ug/kg	U		10000	10000		
cis-1,2-Dichloroethene	20000		ug/kg	U		20000	10000		
trans-1,2-Dichloroethene	20000		ug/kg	U		20000	10000		

Comments: This sample was analyzed by the high level method which results in higher reporting limits.

Toluene failed the PORTS spike recovery limits on the MS (75% -- lower limit=82%) and MSD (77% -- lower limit=82%).

This sample had several TICs (tentatively identified compounds) of substituted benzenes and alkanes at approximately 18 minutes to 30 minutes on the chromatogram at estimated concentrations of 60000 ug/kg to 300000 ug/kg. A complete listing is available upon request.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth:PORTS-XP4-TS-RL7280	QC Batch:QC98194012 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/08/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/13/98 13:56

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
alpha activity	<6		pCi/g				6	
Beta activity	<13		pCi/g				13	

Analy Meth:PORTS-XP4-TS-RL7385	QC Batch:QC98194016 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/08/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/14/98 09:12

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Technetium-99	<0.8		pCi/g				0.8	

Analy Meth:PORTS-XP4-TS-RL7710ug	QC Batch:QC98170002 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/15/98 00:00:00 R J ANDRE	Approver: B W SHORT	06/19/98 14:51

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Uranium	0.034	0.025	ug/g					
Uranium-235	NA		wt %					

Waste Stream Number: SW-3

Waste Stream Title: Floor Sweepings

W.S. SW-3

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

ANALIS ID: 960110-066 Project: ER 9567E Requisition Number: 19260
 Customer Sample ID: VER32855001 Customer: ENV RETORATION
 Date Sampled: 10-JAN-1996 09:30 Date Sample Received: 10-JAN-1996
 Sampled By: R CAUDILL Date Sample Completed: 14-FEB-1996
 Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3520	Sample Prep TCLP Semi-Volatile	COMPLETE			MR KELLEY	17-JAN-1996	96160018
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	17-JAN-1996	96170011
	Sample Prep TCLP	COMPLETE			MR KELLEY	17-JAN-1996	96170011
SW846-3050A	Sample Prep Metals	COMPLETE			ML STEWART	17-JAN-1996	011796-041
SW846-6010A	Aluminum	206		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Antimony	3.6U		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Arsenic	5.5U		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Barium	18.9*		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Beryllium	.09U		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Cadmium	.56		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Calcium	2080		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Chromium	22.8N		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Cobalt	1.2		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Copper	7.3		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Iron	7930*		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Lead	18.1		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Magnesium	328*		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Manganese	63.8		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Molybdenum	1.8		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Nickel	10.7		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Potassium	546N		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Selenium	11.0		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Silver	.19U		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Sodium	114J		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Thallium	9.0*		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Vanadium	.21U		mg/kg	EL SIMPSON	17-JAN-1996	96080085
	Zinc	83.3N*		mg/kg	EL SIMPSON	17-JAN-1996	96080085
TSD553-280	Gross Alpha	8		pCi/g	JP BREWSTER	17-JAN-1996	96070064
	Gross Beta	16		pCi/g	JP BREWSTER	17-JAN-1996	96070064
TSD553-385	Technetium	29.0		pCi/g	JP BREWSTER	17-JAN-1996	96070065
TSD553-440	Cesium-134	<.94J		pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Cesium-137	<1.1J		pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Cobalt-60	<1.8J		pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Gross Gamma	.65J	.52	pCi/g	JD LITTERAL	17-JAN-1996	96070112

TSD553-710	% U-235	2.1%	0.67%	%	CD GOOD	7-FEB-1996	96070168
	Alpha Activity	10		pCi/g	BW SHORT	7-FEB-1996	96070168
	Americium-241	<0.008	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Neptunium-237	<0.033	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Plutonium-238	<0.012	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Plutonium-239/240	<0.012	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-228	<0.098	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-230	<0.080	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-232	<0.085	N/A	pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-234	2.0	0.29	pCi/g	CD GOOD	7-FEB-1996	96070168
	Uranium	6.1	0.87	ug/g	CD GOOD	7-FEB-1996	96070168

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Antimony	50.0	43.76	87.52
Arsenic	50.0	44.72	89.44
Barium	50.0	49.63	99.26
Beryllium	50.0	45.15	90.30
Cadmium	50.0	45.28	90.56
Chromium	50.0	33.26	66.52
Cobalt	50.0	43.47	86.94
Copper	50.0	42.93	85.86
Lead	50.0	39.11	78.22
Manganese	50.0	47.05	94.10
M	50.0	43.52	87.04
Nickel	50.0	39.87	79.74
Potassium	500.0	362.74	72.55
Selenium	50.0	43.65	87.30
Silver	50.0	43.59	87.18
Sodium	50.0	53.04	106.08
Thallium	50.0	43.74	87.48
Vanadium	50.0	43.06	86.12
Zinc	50.0	104.16	208.32

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
 C. J. Van Meter (TCLP Laboratory)

Date Approved: 14-FEB-1996

***** COMMENT PAGE *****
***** 960110-066 *****

* Comments from the Spectrochemistry/ICP Laboratory *****

S -6010A Na qualified as estimate due to calibration verification not meeting Q. C. limits.

***** Comments from the TCLP Laboratory *****

TCLP_Method 1311/8260A : The results listed as "J" were estimated due to
low spike recoveries.

TCLP_Method 1311/8270A : 2,4-Dinitrotoluene was masked by a large multicomponent
band of hydrocarbons eluting from 16 minutes to 25
minutes.
Recovery for this compound was outside method acceptance
criteria. Also, the qualifier mass unit ratios for
identification of this compound were not within method
criteria. Therefore, this compound is flagged "J."

Definition Page for Qualifiers/Flags
960110-066

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
relation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960110-066
Laboratory: TCLP Laboratory
File ID: 96170011
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32855001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19260
Date Sample Received: 10-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 17-JAN-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-JAN-1996
QA File Number: 961601298B01
Dilution Factor: 2
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.040U			
108-39-4	m-Cresol	0.040U			
106-44-5	4-Methylphenol	0.040U			
87-86-5	Pentachlorophenol	0.080U			
95-95-4	2,4,5-Trichlorophenol	0.040U			
88-06-2	2,4,6-Trichlorophenol	0.040U			

ANALYSIS DATA REPORT

AnalIS ID: 960110-066
Laboratory: TCLP Laboratory
File ID: 96170011
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32855001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19260
Date Sample Received: 10-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 17-JAN-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-JAN-1996
QA File Number: 96160129BB01
Dilution Factor: 2
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.080JU			
118-74-1	Hexachlorobenzene	0.040U			
87-68-3	Hexachlorobutadiene	0.040U			
67-72-1	Hexachloroethane	0.040U			
98-95-3	Nitrobenzene	0.040U			
110-86-1	Pyridine	0.040U			

ANALYSIS DATA REPORT

AnalIS ID: 960110-066
Laboratory: TCLP Laboratory
File ID: 96170011
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32855001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19260
Date Sample Received: 10-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 17-JAN-1996
Analysis Procedure Number: 1311/8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-JAN-1996
QA File Number: 96160129A2
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.002JU			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.002U			
67-66-3	Chloroform	0.002U			
106-46-7	1,4-Dichlorobenzene	0.002JU			
107-06-2	1,2-Dichloroethane	0.002JU			
75-35-4	1,1-Dichloroethene	0.002U			
78-93-3	2-Butanone	0.100JU			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.002U			
75-01-4	Vinyl Chloride	0.001JU			

Waste Stream Number: SW-4

Waste Stream Title: Batteries

PORTS MSDS #: 347

PRODUCT: STANDARD, LEAD 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Pb

KEYWORD: STANDARD

PORTS NUMBER: 00190041-100; 00190028-100; 00190041

PORTS MISC INFO:

LAB MSDS# 334

LAB MSDS# 347

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . ~ 212 F

NOTE: ~100'C.

Melting Point. . . . ~ 32 F

NOTE: ~0'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . NG

Specific Gravity . . ~ 1

Vapor Pressure . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Vapor Density. . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Percent Volatiles. . ~ 99

NOTE: @ 21'C.

Evaporation Rate . . NA

NOTE: NOT APPLI/NOT AVAIL.

pH NA

NOTE: NOT APPLI/NOT AVAIL.

Molecular Weight . . EQ 207.20

NOTE: FORMULA WT.

Viscosity. NG

Solubility in Water. COMPLETE (100%).

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLI/NOT AVAIL.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

NOTE: NOT APPLI/NOT AVAIL.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Upper (UEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

==== Component Information =====

LEAD

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.15
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.0
C.A.S. No.: 7439921

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTIN I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Lead Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Pb

FORMULA WT.: 207.20

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.

CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: This product contains a chemical known to the State of California to cause birth defects and other reproductive harm.

EFFECTS OF OVEREXPOSURE:

INHALATION: Severe irritation or burns of respiratory system, headache, nausea, vomiting, dizziness, pulmonary edema, lung inflammation, may be fatal

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, nausea, vomiting, kidney dysfunction

CHRONIC EFFECTS: Damage to lungs, teeth, anemia, kidney damage, blurred vision, lead build-up in the central nervous system

TARGET ORGANS: Eyes, skin, mucous membranes, GI tract, central nervous system, gingival tissue, respiratory system, lungs, kidneys, blood, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease, lung disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If conscious, give water, milk or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Lead (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Lead and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURES: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

♦ PORTS MSDS #: 384

PRODUCT: STANDARD, CADMIUM 10PPM IN 10% NITRIC

AT NUMBER: SRM 3108

FORMULA: Cd: [Cd(NO3)2]: HNO3

KEYWORD: STANDARD

PORTS NUMBER: 00190049-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
NATIONAL INSTITUTE OF STANDARDS (NIST)

GAITHERSBURG
MD

20899
PHONE: PHONE: 301-975-2019
EMERGENCY PHONE:

==== Physical/Chemical Characteristics =====

Melting Point. . . .	EQ 172 F	NOTE: 78'C, DECOMPOSES.
Melting Point. . . .	~ -30 F	NOTE: -42'C.
Freezing Point . . .	NG	
Pour Point	NG	
Softening Point. . .	NG	
Specific Gravity . . .	EQ 1.4	NOTE: DENSITY: 1.504.
Vapor Pressure	EQ 8.0	NOTE: MM @ 20'C.
Vapor Density.	NG	
Percent Volatiles. . .	~ 100	NOTE: 122'C.
Evaporation Rate . . .	NG	
pH	NG	
Molecular Weight . . .	EQ 63.02	
Viscosity.	NG	
Solubility in Water.	COMPLETE.	
Odor/Appearance/Other Characteristics:		
DATA FOR NITRIC ACID / A WHITE TO SLIGHTLY YELLOW LIQUID THAT.....SEE TEXT.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	N*	NOTE: NON FLAMMABLE.
Flash Point, Open Cup . . .	N*	NOTE: NON FLAMMABLE.
Fire Point.	NG	
Auto Ignition.	NA	
Explosive/Flammable Limits		
Lower (LEL).	NA	
Upper (UEL).	NA	

Shipping Regulations

UN/NA Number. NA1760
D.O.T. Hazard Class. . . CORROSIVE

Label NOT GIVEN
Proper Shipping Name . . NITRIC ACID

=====

Preparer/Contact Information: CARMELITA S. DAVIS (301)975-6439

Prepared/Revised 5/01/90

===== Component Information =====

NITRIC ACID

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 10
C.A.S. No.: 7697372

Note:

TLV: 2 PPM.

CADMIUM

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.1
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product %: NG
C.A.S. No.: 7440439

Note:

TLV: DUST.

CADMIUM NITRATE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 2.10
C.A.S. No.: 10325947

Note:

COMPOUND FORMED IN SOLUTION.

===== SECTION I. MATERIAL IDENTIFICATION =====

MATERIAL NAME: Cadmium Spectrometric Standard Solution

DESCRIPTION/OTHER DESIGNATIONS: Cadmium in Nitric Acid (aqua fortis, er's acid, azotic acid) Solution; *Cadmium Nitrate (cadmium nitrate hydrate) in Spectrometric Standard Solution

CHEMICAL FORMULAS: Cd: [Cd(NO3)2]: HNO3

CAS REG. NOS:

7697-37-2 Aqueous Nitric Acid
7440-43-9 Cadmium
10325-94-7 Cadmium Nitrate

DOT CLASSIFICATION: Corrosive (Nitric Acid)

NA1760

Cadmium Compounds

ID #: UN2570

SRM NUMBER: 3108

MSDS NUMBER: 3108

Cadmium Spectrometric Standard Solution

NOTE: This SRM contains approximately 1% cadmium in a 10% nitric acid solution.

*The addition of cadmium to nitric acid solution forms cadmium nitrate which will precipitate upon evaporation or drying of the solution.

ISSUED: May, 1988

REVISED: May, 1990

TELEPHONE: (301) 975-2019

MANUFACTURER/SUPPLIER: Available from a number of suppliers.

MANUFACTURER'S/SUPPLIER'S NAME AND ADDRESS:

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
OFFICE OF STANDARD REFERENCE MATERIALS PROGRAM
GAITHERSBURG, MARYLAND 20899

===== SECTION II. HAZARDOUS INGREDIENTS =====

SEE COMPONENT INFORMATION.

HAZARDOUS COMPONENTS

LIMITS AND TOXICITY DATA

Nitric Acid

HUMAN, ORAL LDLO: (4)30 mg/kg

CADMIUM

HUMAN, INHALATION LCLO: 39 mg/m3 for 20 mins.

RAT, ORAL LD50: 225 mg/kg

RAT, INHALATION LC50: 25 mg/m3 for 30 mins.

Cadmium Nitrate*

RABBIT, SKIN (SEV): 500 mg for 24 hrs.

RABBIT, EYE (MOD.): 20 mg for 24 hrs.

*Compound formed in solution.

These standards reflect hazardous concentrations of 55-70% for nitric acid and ~ 100% for cadmium and cadmium nitrate.

===== SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

NITRIC ACID:

APPEARANCE AND ODOR: A white to slightly yellow liquid that darkens to a brownish color upon aging and/or exposure to light; characteristic NO₂ odor.

SOLUBILITY IN OTHER COMPOUNDS: Decomposes in alcohol.

CADMIUM NITRATE:

APPEARANCE AND ODOR: White, amorphous pieces of hygroscopic needles.

MOLECULAR WEIGHT: 236.42

MELTING POINT: 350 °C

SOLUBILITY IN WATER: Soluble.

SOLUBILITY IN OTHER COMPOUNDS: Soluble in ammonia and alcohol.

CADMIUM:

APPEARANCE AND ODOR: Hexagonal crystals, silver-white malleable metal.

MOLECULAR WEIGHT: 112.41

DENSITY: 8.642

BOILING POINT: 767 + or - 2 °C

MELTING POINT: 320.9 °C (becomes brittle at 80 °C)

REFRACTIVE INDEX: 1.13

MUSKES HARDNESS: 2.0

VAPOR PRESSURE (AT 394 °C): 1 mm

SOLUBILITY IN WATER: Insoluble

SOLUBILITY IN OTHER COMPOUNDS: Soluble in acids, especially nitric, and in ammonium nitrate.

NOTE: Physical and chemical data on this nitric acid solution does not exist. The data provided above is for the hazardous ingredients >= 1%.

===== SECTION IV. FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: Nonflammable, however, nitric acid is a strong oxidizing agent which can react with combustible materials to cause fires.

(METHOD USED): N/A

AUTOIGNITION TEMPERATURE: N/A

(NOTE: Autoignition temperature for Cd dust layer is 250 °C)

FLAMMABILITY LIMITS IN AIR (VOLUME %): N/A

EXTINGUISHING MEDIA: Nitric Acid does not burn. Use extinguishing agents that will put out the surrounding fire. Use a water spray to dilute nitric acid during fires and to absorb liberated oxides of nitrogen.

SPECIAL FIRE PROCEDURES: Self-contained breathing apparatus should be used by firefighters in an enclosed area with full protective clothing when nitric acid is involved in the fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Although nitric acid does not burn, it is a powerful oxidizing agent that can react with combustible materials to cause fire. The acid can also react with metals to liberate extremely flammable hydrogen gas.

The acid reacts violently with acetic acid, acetic anhydride, (acetone + acetic acid), (acetone + H_2SO_4), acetylene, acrolein, acrylonitrile, allyl alcohol, allyl chloride, 2-amino ethanol, NH_3 , NH_4OH , aniline, anion exchange resins, (dichromate + anion exchange resins), Sb, AsH₃, Bi, B, boron decahydride, BP, BrF₅, n-butyraldehyde, Ca hypophosphite, C, Cs₂C₂, 4-chloro-2-nitroaniline, ClF₃, chlorosulfonic acid, cresol, cumene, Cu₃N₂, CuN₃, cyanides, cyclic ketones, cyclohexanol, cyclohexanone, diborane, 2,6-di-tert-butyl phenol, diisopropyl ether, epichlorohydrin, ethanol, m-ethylaniline, ethylene imine, 5-ethyl-2methyl pyridine, 5-ethyl-2-picoline, C₂H₅PH₂, FeO, F₂, furfuryl alcohol, Ge, glyoxal, hydrazine, HN₃, HI, H₂O₂, H₂Se, H₂S, H₂Te, (indane + H_2SO_4), isoprene, (ketones + H_2O_2), (lactic acid + HF), Li, Li₆Si₂, Mg, Mg₃P₂, Mg-Ti alloy, Mn, mesitylene, mesityl oxide, 2-methyl-5-ethyl puridine, 4-methyl-cyclohexanone, NdP, nitrobenzene, oleum, organic matter, PH₃, PH₄I, P, P₄I₃, PCl₃, phthalic acid, phthalic anhydride, KH₂PO₂, beta-propiolactone, propylene oxide, pyridine, Rb₂C₂, Se, selenium iodophosphide, (Ag + ethanol), Na, NaN₃, NaOH, SbH₃, sulfamic acid, (H_2SO_4 + glycerides), terpenes, B₄H₁₀, thiocyanates, thiophene, Ti, Ti alloy, Ti-Mg alloy, (H_2SO_4 + C₆H₅CH₃), toluidine, triazine, uns-dimethyl hydrazine, U, U-alloy, U-Nd alloy, U-Nd-Zr alloy, vinylacetate, vinylidene chloride, Zn, Zr-U alloys.

Cadmium and cadmium containing compounds can react violently with fused ammonium nitrate. Contact with hydrochloric and sulfuric acids generates flammable hydrogen gas (reaction is slow).

===== SECTION V. REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Avoid any contact with incompatible chemicals. Avoid excessive heat.

INCOMPATIBILITY (MATERIALS TO AVOID): Contact with organic materials such as wood, paper, sawdust, or alcohol, etc., may cause fires. Combustible materials can attain increased flammability after being exposed to nitric acid even if they do not immediately catch fire.

Oxides of nitrogen are evolved from cadmium upon oxidation by nitric acid. Cd is incompatible with strong oxidizing agents, elemental sulfur, selenium, tellurium and hydrazoic acid.

See UNUSUAL FIRE AND EXPLOSION HAZARDS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Nitrous oxides, including NO, NO₂, N₂O₃ and N₂O as well as nitric acid mist or vapor can be produced upon decomposition or reaction of HNO₃.

Cadmium can also produce toxic oxides of nitrogen upon oxidation by nitric acid. Heating cadmium metal produces toxic fumes of cadmium oxide.

HAZARDOUS POLYMERIZATION: Will Not Occur

===== SECTION VI. HEALTH HAZARD DATA =====

ROUTE OF ENTRY:

[AANHALATION: X
SKIN: X
INGESTION: X

HAZARDS (ACUTE AND CHRONIC): This material is corrosive to all body tissues. Nitric acid is extremely destructive to tissue of the mucus membranes, upper respiratory tract, eyes and skin.

Cadmium is toxic by inhalation and ingestion. Acute toxicity is almost always caused by inhalation of fumes or dust. Chronic poisoning has been reported after prolonged exposure to cadmium oxide fumes and dust, cadmium sulfides and cadmium stearates. The primary effects of chronic inhalation in humans are pulmonary emphysema and kidney damage. Skeletal abnormalities (osteoporosis and pseudofractures) and anemia have been reported following prolonged exposure to cadmium oxide. Prolonged exposure can cause anosmia and a yellow stain that gradually appears on the teeth. NIOSH has recommended that cadmium compounds be regarded as potential occupational carcinogens. This recommendation is based in part on recent epidemiological evidence of excessive lung cancer among workers exposed to cadmium oxide.

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation, difficulty breathing, burning sensation, and yellow skin discoloration can result from contact with nitric acid.

Nausea and vomiting can result from uranium contact. Ingestion of cadmium compounds can cause severe gastrointestinal distress such as diarrhea and abdominal pain. Inhalation of the fumes can cause irritation of the nose and throat, cough, dyspnea, chest pains, fever and chills. Symptoms of acute intoxication do not develop until several hours after the exposure.

CLINICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/A

NOTE: Heavy smoking has been reported to considerably increase the tissue levels of Cd.

LISTED AS A CARCINOGEN/POTENTIAL CARCINOGEN:

	YES	NO
IN THE NATIONAL TOXICOLOGY PROGRAM (NTP) REPORT ON CARCINOGENS:	X	
IN THE INTERNATIONAL AGENCY FOR RESEARCH (IARC) MONOGRAPHS:	X	
BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):	X	

NOTE: Cadmium and cadmium nitrate are considered potential carcinogens.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN: Wash immediately with soap and water. Remove contaminated clothing. Watch for chemical burns and treat them accordingly. Contact a physician if necessary.

NOTE TO PHYSICIAN: Wash affected skin areas with a 5% solution of sodium bicarbonate (NaHCO₃).

EYES CONTACT: Immediately flush eyes, including under the eyelids, with water for at least 15 minutes. Contact a physician if necessary.

INHALATION: Remove the victim to fresh air and restore and/or support breathing. Contact a physician if necessary.

INGESTION: Call a poison control center. Never give anything by mouth to

someone who is convulsing. Do not induce vomiting. If the victim is responsive, administer one or two glasses of water to drink as quickly as possible after exposure.

TARGET ORGAN(S) OF ATTACK: HNO₃ Lungs, Skin

^D) COMPOUNDS: Lungs, Respiratory System, Blood, GI Tract, Kidneys

1 ; Preplacement and annual medical examinations with emphasis on respiratory tract, skin irritations, dental erosion, and lung function tests, should be provided for workers frequently exposed to nitric acid. Medical surveillance procedures for urinary cadmium deposits and protein determinations, and pulmonary-function testing should also be performed.

===== SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Notify safety personnel, provide adequate ventilation and eliminate all sources of ignition immediately in case contact with metals should produce highly flammable hydrogen gas. Cleanup personnel need protection against contact with and inhalation of nitric acid. Use water sprays to direct nitric acid away from incompatible chemicals. Surfaces contaminated with spills should be covered with soda ash or sodium bicarbonate to neutralize the acid. Place the neutralized material into containers suitable for eventual disposal, reclamation or destruction.

WASTE DISPOSAL: Follow all Federal, state and local laws governing disposal. Consider reclamation, recycling, or destruction rather than disposal into a landfill.

HANDLING & STORING: The nitrogen oxides produced from the acid are all toxic; nitric acid itself is corrosive. Neoprene gloves and body shields should be used where splashing may occur. Chemical safety showers and eyewash stations must be readily available. Workers must receive training before handling this material in the workplace; even experienced workers should undergo refresher training periodically.

NOTE: DO NOT WEAR CONTACT LENSES IN THE WORK AREA! Contact lenses pose a special problem. Soft lenses can absorb irritants and all lenses concentrate them. Particles can adhere to lenses and cause corneal damage.

Store in a cool, dry, well-ventilated area away from incompatible materials, such as strong bases, metal powders, carbides, sulfides, and any other readily oxidizable material (see sect. IV and sect. V). Protect containers from physical damage and keep from direct sunlight.

===== SECTION VIII. SOURCE DATA/OTHER COMMENTS =====

SOURCES:

Genium Publishing Corporation, MSDS No. 7, August, 1988.
Genium Publishing Corporation, MSDS No. N154, October, 1985.
DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 5TH ED., 1979.
HANDBOOK OF TOXIC AND HAZARDOUS CHEMICALS AND CARCINOGENS, 2ND ED., 1985.
HAWLEY'S CONDENSED CHEMICAL DICTIONARY, 11TH ED., 1987.
NIST IGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA, 2ND ED., VOL. I
D II, 1988.

Carmelita S. Davis (301) 975-6439

National Institute of Standards and Technology
Office of Standard Reference Materials

Gaithersburg, Maryland 20899

NOTE: Physical and chemical data contained this MSDS are provided for use in

assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however, NIST does not certify the data on the MSDS. The certified values for this material are given only on the NIST Certificate of Analysis.

Waste Stream Number: SW-5, 5A, 5B, and 5C

Waste Stream Title: Light Bulbs

C ver Smpl Id: VER46552001

S-X-04-WM BJC09824

ubproj Analyses: SOLID

Customer: J A APPLGATE

COC#: 54824

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: SOLID

Protocol: RCRA

Status: APPROVED

Location:

Sampled: 04/17/98 09:50:00

Received: 04/17/98 13:35:32

Needed: 05/22/98 00:00:00

Approved: 05/22/98 14:34:44

Analy Meth: SW846-3050A

QC Batch:

Test: 3050APREP

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 04/24/98 00:00:00 K A DAYS

Approver: D K PEREZ

05/02/98 13:14

Analy Meth: SW846-6010A

QC Batch:

Test: 6010AMETALS5

Rpt Basis: none

Date Approved

Prep Meth: SW846-3050A

Analyzed: 05/07/98 00:00:00 T E SHOOK

Approver: D K PEREZ

05/18/98 15:12

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	6.7		mg/kg	BN			1		
Antimony	1.6		mg/kg	U			1		
Arsenic	2.2		mg/kg	U			1		N
Barium	0.15		mg/kg	BN			1		N
Beryllium	0.10		mg/kg	U			1		
Cadmium	0.17		mg/kg	U			1		N
Calcium	27.3		mg/kg	B			1		
Chromium	0.53		mg/kg	B			1		N
t	0.32		mg/kg	U			1		
r	0.30		mg/kg	B			1		
Iron	35.2		mg/kg	BN			1		
Lead	6.3		mg/kg	BN			1		N
Magnesium	9.2		mg/kg	B			1		
Manganese	0.14		mg/kg	U			1		
Molybdenum	0.27		mg/kg	U			1		
Nickel	0.61		mg/kg	U			1		
Potassium	31.3		mg/kg	JU			1		
Selenium	3.4		mg/kg	U			1		N
Silver	0.46		mg/kg	U			1		N
Sodium	53.3		mg/kg	BN			1		
Thallium	2.3		mg/kg	U			1		
Vanadium	0.24		mg/kg	U			1		
Zinc	14.6		mg/kg	B			1		

Comments: QC File: 98080370

Potassium was qualified a estimate due to initial calibration check did not meet acceptance limits.

Portsmouth Analytical Laboratory
Official Report

Meth:SW846-7470A	QC Batch:	Test:HG7470A	Rpt Basis:none	Date Appr
Prep Meth:	Analyzed:05/07/98 00:00:00 R B COLLEY	Approver: D K PEREZ	05/13/98 1	

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	3222		mg/kg				40000		Y

Comments: File: 98080367

EPA Qualifiers:

- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth:PORTS-XP4-TS-RL7280	QC Batch:QC98126003	Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:05/04/98 00:00:00 J P BREWSTER	Approver: B W SHORT	05/07/98 10:23	

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec	Lvl
Alpha activity	<7		pCi/g						
Beta activity	<12		pCi/g						

Analy Meth:PORTS-XP4-TS-RL7385	QC Batch:QC98126001	Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
eth:	Analyzed:05/04/98 00:00:00 J P BREWSTER	Approver: B W SHORT	05/07/98 10:	

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec
Technetium-99	<0.6		pCi/g					

Analy Meth:PORTS-XP4-TS-RL7710ug	QC Batch:QC98142007	Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:05/18/98 00:00:00 R J ANDRE	Approver: B W SHORT	05/22/98 14:32	

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec	Lvl
Uranium	0.33	0.06	ug/g						
Uranium-235	0.8	0.6	wt %						

Waste Stream Number: SW-6

Waste Stream Title: Antifreeze

Table 1
Waste Stream SW-6
TCLP Metals Analysis from Sampling Events

Date Sampled	Composite Number	Arsenic (mg/l TCLP)	Barium (mg/l TCLP)	Cadmium (mg/l TCLP)	Chromium (mg/l TCLP)	Lead (mg/l TCLP)	Mercury (mg/l TCLP)	Selenium (mg/l TCLP)	Silver (mg/l TCLP)
08/18/98	Composite 1	2.14BJN	0.048B	<0.10	<1.0	<1.0	<0.01	<0.9	<0.2
08/18/98	Composite 2	<1.0	<0.10	0.123B	<1.0	4.78B	<0.01	2.09B	<0.2
08/18/98	Composite 3	<1.0	<0.10	0.12B	<1.0	<1.0	<0.01	1.17B	<0.2
08/18/98	Composite 4	<0.10	4.2B	0.032B	<0.10	<0.10	<0.01	0.618B	0.025B
08/18/98	Composite 5	1100JN	<0.10	0.784B	<1.0	<1.0	<0.01	1.44B	<0.2
08/18/98	Composite 6	<0.10	0.0048B	0.074B	0.057B	<0.10	<0.01	4.35	<0.2
08/18/98	Composite 7	<1.0	<0.10	0.128B	<1.0	<1.0	<0.01	1.49BN	<0.2
08/18/98	Composite 2 Dup	<1.0	<0.10	0.144B	<1.0	1.18B	<0.01	1.94BN	<0.2
08/18/98	Field Blank	<0.04	<0.002	<0.003	<0.02	<0.04	<0.001	<0.04	<0.005

Qualifiers:

B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).

U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

N - Spike sample recovery is not within recovery limits.

J - Qualify data for the sample as estimated.

* - Duplicate analysis not within control limits.

Portsmouth Analytical Laboratory
Official Report

Cur. or Smpl Id: BJCO37C0100SW6

Matrix: LIQUID

Sampled: 08/18/98 10:35:00

: X-04-WM BJC09859

Protocol: RCRA

Received: 08/19/98 09:10:52

Subp. J Analyses: LIQUID

Status: APPROVED

Needed: 09/03/98 23:59:0

Customer: J A APPLGATE

Location:

Approved: 09/04/98 14:06:28

COC#: 061082

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Analy Meth: SW846-3010A

QC Batch:

Test: 3010APREP

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 08/26/98 00:00:00 K A DAYS

Approver: D K PEREZ

09/03/98 14:25

Analy Meth: SW846-6010A

QC Batch:

Test: 6010AMETALS5

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 08/26/98 00:00:00 E L SIMPSON

Approver: D K PEREZ

09/03/98 14:48

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	430		ug/L	U			25		
Antimony	1020		ug/L	U			25		
Arsenic	2140		ug/L	BJN			25		
Barium	48.2		ug/L	B			25		
Beryllium	5.0		ug/L	U			25		
Boron	64900		ug/L				25		
Cadmium	57.5		ug/L	U			25		
Calcium	14400		ug/L	J			25		
Chromium	308		ug/L	U			25		
Cobalt	495		ug/L	U			25		
Copper	476		ug/L	B			25		
Iron	8160		ug/L	*J			25		
Lead	735		ug/L	U			25		
Lithium	20.0		ug/L	JU			25		
Magnesium	6940		ug/L	J			25		
Manganese	107		ug/L	B			25		
Molybdenum	196000		ug/L				25		
Nickel	175		ug/L	U			25		
Phosphorus	102000		ug/L	J			25		
Potassium	529000		ug/L	J			25		
Selenium	845		ug/L	U			25		
Silicon	13600		ug/L	*J			25		
Silver	102		ug/L	U			25		
Sodium	342000		ug/L	J			25		
Thallium	978		ug/L	U			25		
Vanadium	738		ug/L	BN			25		
Zinc	6890		ug/L				25		

Comments: QC File: 98080687

Due to elevated analytes and matrix interferences, this sample required dilution.

Ag, Na and Si qualified as estimates due to calibration not meeting acceptance limits. Li and P qualified due to lack of calibration verification. As, Ca, Fe, Mg, Na and Si qualified as estimate due to lab control sample reading greater than acceptance limits. As, K and Na qualified as estimates due to

interference checks not meeting acceptance limits.

Analy Meth:SW846-7470A	QC Batch:	Test:HG7470A	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/24/98 00:00:00	C J MAYNARD	Approver: D K PEREZ	09/03/98 14:49

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	10		ug/L	U			1		

Comments: QC File: 98080656

Analy Meth:SW846-9040B	QC Batch:QC98243019	Test:PH	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/19/98 13:50:00	R S KISOR	Approver: R E CHARLES	09/01/98 09:11

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
pH	7.71		pH units				1		

Comments: SW846-9040B pH: The replicate result for this sample is 7.73 pH units.

Analy Meth:EPA -160.2	QC Batch:QC98245002	Test:TSS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/19/98 12:00:00	A R CLAUSING	Approver: R E CHARLES	09/02/98 16:42

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Filtered Solids	358		mg/L				1		

Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth:SW846-9020A	QC Batch:QC98243018	Test:TOX	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/27/98 00:00:00	C J HOLBROOK	Approver: R E CHARLES	09/01/98 10:26

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Total Organic Halides (TOX)	34		ug/g				1		

Comments: The matrix of this sample was not compatible with the desorption method of SW846-9020A. The sample was analyzed by directly injecting the sample into the pyrolysis system of the instrument. The results reported are actually Total Halides, as per method OA33498025.

Portsmouth Analytical Laboratory
Official Report

n ch:PORTS-OA97333006 QC Batch:QC98247002 Test:AB-ACT-GPC Rpt Basis:none Date Appro
 Prep Meth: Analyzed:08/31/98 00:00:00 J P BREWSTER Approver: J J SISLER 09/04/98 13.

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	<0.1		pCi/ml			0.1	
Beta activity	0.7		pCi/ml			0.3	

Analy Meth:PORTS-XP4-TS-RL7720 QC Batch:QC98246004 Test:ALPHA-U-AS Rpt Basis:none Date Approved
 Prep Meth: Analyzed:08/24/98 00:00:00 R J ANDRE Approver: J J SISLER 09/03/98 13:57

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium-233/234	0.43	0.29	pCi/L				
Uranium-235	<0.13		pCi/L				
Uranium-236	<0.12		pCi/L				
Uranium-238	<0.29		pCi/L				

Analy Meth:PORTS-XP4-TS-RL7400 QC Batch:QC98244004 Test:GAMMA-ACT-GS Rpt Basis:none Date Approved
 Prep Meth: Analyzed:08/25/98 00:00:00 W C ZUEFLE Approver: J J SISLER 09/03/98 09:20

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Actinium-228	<0.79		pCi/ml				
Antimony-125	<0.30		pCi/ml				
Bismuth-212	<1.34		pCi/ml				
Bismuth-214	<0.36		pCi/ml				
Cadmium-141	<0.07		pCi/ml				
Cerium-144	<0.29		pCi/ml				
Cesium-134	<0.13		pCi/ml				
Cesium-137	<0.18		pCi/ml				
Lead-210	<0.63		pCi/ml				
Lead-212	<0.15		pCi/ml				
Lead-214	<0.36		pCi/ml				
Niobium-95	<0.19		pCi/ml				
Potassium-40	<4.41		pCi/ml				
Protactinium-231	<3.24		pCi/ml				
Protactinium-234m	<33.6		pCi/ml				
Radium-224	<1.43		pCi/ml				
Radium-226	<0.36		pCi/ml				
Radium-228	<0.79		pCi/ml				
Ruthenium-103	<0.11		pCi/ml				
Ruthenium-106	<1.42		pCi/ml				
Thallium-208	<0.16		pCi/ml				
Zirconium-95	<0.32		pCi/ml				

Portsmouth Analytical Laboratory
Official Report

th:PORTS-XP4-TS-RL7380	QC Batch:QC98247001 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
ep Meth:	Analyzed:09/02/98 00:00:00 J P BREWSTER	Approver: J J SISLER	09/04/98 13:54

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	<0.8		pCi/ml			0.8	

Analy Meth:PORTS-XP4-TS-RL7720ug	QC Batch:QC98246005 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/24/98 00:00:00 R J ANDRE	Approver: J J SISLER	09/03/98 14:05

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	<0.87		ug/L				

Analy Meth:PORTS-XP4-TS-RL7720wt%	QC Batch:QC98246006 Test:U235-WT-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/24/98 00:00:00 R J ANDRE	Approver: J J SISLER	09/03/98 14:11

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium-235	NA		wt %	X			

Footnotes:

X - U-235 was below detection limits.

Waste Stream Number: SW-7

Waste Stream Title: Gas Cylinder

Waste stream SW-7 consists of off specification precision mixed chemical gases. Exact concentrations of the hazardous constituent Hydrogen Cyanide is known to be 9.9 ppm. This waste stream is listed waste P063 because Hydrogen Cyanide is the sole active ingredient in the mix.

Waste Stream Number: SW-8

Waste Stream Title: Aerosol Cans

Waste stream SW-8 consists of punctured aerosol cans and the composite residue from the cans. The punctured aerosol cans are managed as non-hazardous scrap metal. The liquid residue from the cans is managed as D001 flammable hazardous waste.

Waste Stream Number: SW-9

Waste Stream Title: Diesel Fuel, Gasoline, Kerosene

Customer Smpl Id: VER46658001

t:X-04-WM BJC09825

obj Analyses: LIQUID

Customer: J A APLEGATE

COC#: 059686

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: LIQUID

Protocol: RCRA

Status: APPROVED

Location:

Sampled: 06/10/98 13:10:00

Received: 06/11/98 13:07:41

Needed: 07/16/98 23:59:00

Approved: 07/15/98 13:55:52

Analy Meth: SW846-1010

QC Batch:

Test: FLASHPOINT

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 07/14/98 00:00:00 M L STEWART

Approver: D K PEREZ

07/15/98 13:54

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Flash Point Closed Cup	63.0		deg C				1		

Comments: QC File: 981100022

Replicate result was 64.0 oC.

Analy Meth: SW846-8260A

QC Batch: QC98170001 Test: VOA

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 06/18/98 00:00:00 J N STRICKLAND

Approver: C J VANMETER

07/07/98 16:41

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	2000000		ug/kg	U		2000000	1000000		
1,1,2,2-Tetrachloroethane	2000000		ug/kg	U		2000000	1000000		
1,1,2-Trichloro-1,2,2-trifluoroethane	2000000		ug/kg	U		2000000	1000000		
?-Trichloroethane	2000000		ug/kg	U		2000000	1000000		
Dichloroethane	2000000		ug/kg	U		2000000	1000000		
1,1-Dichloroethene	2000000		ug/kg	U		2000000	1000000		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	4000000		ug/kg	U		4000000	1000000		
1,2-Dichlorobenzene	2000000		ug/kg	U		2000000	1000000		
1,2-Dichloroethane	2000000		ug/kg	U		2000000	1000000		
1,2-Dimethylbenzene	2000000		ug/kg	U		2000000	1000000		
1,3 (1,4)-Dimethylbenzene	2000000		ug/kg	U		2000000	1000000		
1,3-Dichlorobenzene	2000000		ug/kg	U		2000000	1000000		
1,4-Dichlorobenzene	2000000		ug/kg	U		2000000	1000000		
2-Butanone	50000000		ug/kg	U		50000000	1000000		
4-Methyl-2-pentanone	50000000		ug/kg	U		50000000	1000000		
Acetone	50000000		ug/kg	U		50000000	1000000		
Benzene	2000000		ug/kg	U		2000000	1000000		
Bromodichloromethane	2000000		ug/L	U		2000000	1000000		
Bromoform	2000000		ug/kg	U		2000000	1000000		
Bromomethane	4000000		ug/kg	U		4000000	1000000		
Carbon disulfide	2000000		ug/kg	U		2000000	1000000		
Carbon tetrachloride	2000000		ug/kg	U		2000000	1000000		
Chlorobenzene	2000000		ug/kg	U		2000000	1000000		
Chloroethane	4000000		ug/kg	U		4000000	1000000		
Chloroform	2000000		ug/kg	U		2000000	1000000		
Chloromethane	4000000		ug/kg	U		4000000	1000000		
Dibromochloromethane	2000000		ug/kg	U		2000000	1000000		
Ethylbenzene	2000000		ug/kg	U		2000000	1000000		
ethylene chloride	2000000		ug/kg	U		2000000	1000000		

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
chloroethene	2000000		ug/kg	U		2000000	1000000		
ene	2000000		ug/kg	U		2000000	1000000		
Trichloroethene	2000000		ug/kg	U		2000000	1000000		
Trichlorofluoromethane	4000000		ug/kg	U		4000000	1000000		
Vinyl chloride	1000000		ug/kg	U		1000000	1000000		
cis-1,2-Dichloroethene	2000000		ug/kg	U		2000000	1000000		
trans-1,2-Dichloroethene	2000000		ug/kg	U		2000000	1000000		

Comments: This sample was analyzed by the high level extraction method which results in higher reporting limits.

Although no target compounds were present in the sample above the reporting limits, a group of substituted alkanes and benzenes was found from approximately twenty three minutes to thirty four minutes at estimated concentrations from 5,000,000 ug/kg to 10,000,000 ug/kg. A list of TICS (tentatively identified compounds) is available upon request. The sample had an odor of diesel fuel.

EPA Qualifiers:

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth:PORTS-OA97333006	QC Batch:QC98176001 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/23/98 00:00:00 J P BREWSTER	Approver: B W SHORT	06/25/98 13:20

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
activity	<0.2		pCi/ml				0.2	
Beta activity	<0.5		pCi/ml				0.5	

Analy Meth:PORTS-XP4-TS-RL7380	QC Batch:QC98175003 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/23/98 00:00:00 J P BREWSTER	Approver: B W SHORT	06/24/98 09:30

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Technetium-99	<0.8		pCi/ml				0.8	

Analy Meth:PORTS-XP4-TS-RL7720ug	QC Batch:QC98196000 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/07/98 00:00:00 R J ANDRE	Approver: B W SHORT	07/15/98 10:32

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Uranium	<0.02		ug/ml					
Uranium-235	NA		wt %					

Waste Stream Number: SW-11

Waste Stream Title: Non-Laboratory Off-Specification Chemicals

Waste stream SW-11 consists of off specification non-laboratory chemicals. The waste characteristics are based on the known properties of the waste and are assigned as indicated by the MSDS sheet for the chemical or by manufacture information.

Waste Stream Number: SW-12

Waste Stream Title: Flushing Solution

W
4w

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 930827-065 Project: WMG T RFD Requisition Number: 002722
Customer Sample ID: RFD18780 Customer: ENV./WASTE MGT.
Date Sampled: 26-AUG-1993 Date Sample Received: 27-AUG-1993
Sampled By: BK KELLEY Date Sample Completed: 29-SEP-1993
Material Description: X344 COIL CLEANING SOLN

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-6010	Arsenic	2.6U		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Barium	1.00		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Cadmium	0.30U		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Chromium	5.7		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Lead	17.2*		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Selenium	4.0U		mg/kg	TE SHOOK	7-SEP-1993	93080659
	Silver	1.2		mg/kg	TE SHOOK	7-SEP-1993	93080659
SW846-7470	Mercury	<.025N		MG/KG	EK GILBERT	16-SEP-1993	93080697
TSD515-500	Uranium (Waste)	<1.0		UG/G	SK BENNINGTON	21-SEP-1993	93101062
	Gross Alpha Activity	<0.5		pCi/mL	JJ SISLER	9-SEP-1993	93071395
	Gross Beta Activity	<1.1		pCi/mL	JJ SISLER	9-SEP-1993	93071395
TSD553-370	Technetium	<1.7		pCi/mL	JJ SISLER	31-AUG-1993	93071131

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	38.46	38.2894	99.56
BARIUM	38.46	37.6452	97.88
CADMIUM	38.46	37.5779	97.71
CHROMIUM	38.46	35.8673	93.26
LEAD	38.46	36.1279	93.94
MERCURY	.149	0.079	53.02
SELENIUM	38.46	36.5846	95.12
SILVER	38.46	36.0923	93.84
URANIUM (WASTE)	9.98	8.8	88.04

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial

dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

Y - y data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

1 condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
D. E. Boyd (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)

Date Approved: 29-SEP-1993

Waste Stream Number: SW-13

Waste Stream Title: Circuit Boards, Miscellaneous Equipment Components

W.S. SW-13

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 960219-111 Project: ER 9567E Requisition Number: 20228
Customer Sample ID: VER35239001V Customer: ENV RETORATION
Date Sampled: 19-FEB-1996 09:25 Date Sample Received: 19-FEB-1996
Sampled By: MB HAMEL Date Sample Completed: 21-MAR-1996
Material Description: X-7725 PICTURE TUBES

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			LD DRYDEN	4-MAR-1996	030496-004
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	28-FEB-1996	96170042

Laboratory Manager: C. J. Van Meter (TCLP Laboratory)
Date Approved: 21-MAR-1996

***** COMMENT PAGE *****

***** 960219-111 *****

** Comments from the TCLP Laboratory *****

TCLP_Method 1311/6010A : Arsenic was qualified as estimated due to the interference

check standard not meeting acceptance limits.

I Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - Value is between the LC and the LLD.
- Warning "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960219-111
Laboratory: TCLP Laboratory
File ID: 96170042
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER35239001V
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20228
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 28-FEB-1996
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 4-MAR-1996
QA File Number: 96080234
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023JU			
7440-39-3	Barium	5.10			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.227			
7439-92-1	Lead	0.073			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.028			

ANALYSIS DATA REPORT

AnalIS ID: 960219-111
Laboratory: TCLP Laboratory
File ID: 96170042
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER35239001V
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20228
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_HG_RPT

Date Extracted/Prepared: 28-FEB-1996
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-FEB-1996
QA File Number: 96080208
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7439-97-6	Mercury	0.010U			

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

ANALIS ID: 960219-110 Project: ER 9567E Requisition Number: 20228
 Customer Sample ID: VER35239001P Customer: ENV RETORATION
 Date Sampled: 19-FEB-1996 09:25 Date Sample Received: 19-FEB-1996
 Sampled By: MB HAMEL Date Sample Completed: 21-MAR-1996
 Material Description: X-7725 PICTURE TUBES

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			LD DRYDEN	4-MAR-1996	030496-004
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	28-FEB-1996	96170042

Laboratory Manager: C. J. Van Meter (TCLP Laboratory)

Date Approved: 21-MAR-1996

***** COMMENT PAGE *****

***** 960219-110 *****

* Comments from the TCLP Laboratory *****

TCLP Method 1311/6010A : Arsenic was qualified as estimated due to the interference

check standard not meeting acceptance limits.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
relation coefficient for MSA is less than 0.995.
- # - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960219-110
Laboratory: TCLP Laboratory
File ID: 96170042
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER35239001P
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20228
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 28-FEB-1996
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 4-MAR-1996
QA File Number: 96080234
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023JU			
7440-39-3	Barium	26.7			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.131			
7439-92-1	Lead	2.19			
7782-49-2	Selenium	0.035U			
7440-22-4	Silver	0.024			

ANALYSIS DATA REPORT

AnalIS ID: 960219-110
Laboratory: TCLP Laboratory
File ID: 96170042
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER35239001P
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20228
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_HG_RPT

Date Extracted/Prepared: 28-FEB-1996
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-FEB-1996
QA File Number: 96080208
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7439-97-6	Mercury	0.010U			

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

ANALIS ID: 960219-109 Project: ER 9567E Requisition Number: 20228
 Customer Sample ID: VER35239001 Customer: ENV RETORATION
 Date Sampled: 19-FEB-1996 09:25 Date Sample Received: 19-FEB-1996
 Sampled By: MB HAMEL Date Sample Completed: 11-MAR-1996
 Material Description: X-7725 PICTURE TUBES

** No comments were made for this sample. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD553-280	Gross Alpha	<1		pCi/g	JP BREWSTER	1-MAR-1996	96070289
	Gross Beta	<2		pCi/g	JP BREWSTER	1-MAR-1996	96070289
TSD553-385	Technetium	<9.5		pCi/g	JP BREWSTER	1-MAR-1996	96070290
TSD553-710	U-235	ND		pCi/g	SJ JAMES	22-FEB-1996	96070245
	Uranium	<0.017		ug/g	SJ JAMES	22-FEB-1996	96070245

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 Approved: 12-MAR-1996

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

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- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

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 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

Waste Stream Number: SW-14

Waste Stream Title: Cleanup & Spill Residue

VER47132001

Portsmouth Analytical Laboratory

X982390028

Official Report

C r r Smpl Id: VER47132001

Matrix: LIQUID

Sampled: 08/27/98 10:05:00

:X-04-WM BJC09825

Protocol:RCRA

Received: 08/27/98 12:28:25

ubproj Analyses:LIQUID

Status: APPROVED

Needed: 10/01/98 23:59:00

Customer:J A APPLGATE

Location:

Approved: 09/30/98 16:49:58

COC#: 061114

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Analy Meth:SW846-3015

QC Batch:

Test:3015PREP

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:09/11/98 00:00:00 K A DAYS

Approver: D K PEREZ

09/25/98 14:37

Analy Meth:SW846-6010A

QC Batch:

Test:6010AMETALS2

Rpt Basis:none

Date Approved

Prep Meth: SW846-3015

Analyzed:09/12/98 00:00:00 T E SHOOK

Approver: D K PEREZ

09/30/98 16:49

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Arsenic	22100		ug/L				1		
Barium	28.0		ug/L				1		
Cadmium	23.0		ug/L	U			1		
Chromium	406		ug/L				1		
Lead	294		ug/L	U			1		
Selenium	338		ug/L	U			1		
Silver	49.5		ug/L				1		

Comments: QC File: 98080745

EPA Qualifiers:

U - Analyte analyzed for but undetected. Analyte result was below the Instrument
Detection Limit (IDL).

Analy Meth:SW846-3520

QC Batch:QC98265015 Test:ORGEXT-SVOC

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:09/08/98 00:00:00 D K SCAGGS

Approver: C J VANMETER

09/24/98 16:46

Comments: Method SW846-3520B

The holding time for this sample is actually 14 days since the sample
matrix is a waste liquid and not a water.

Analy Meth:SW846-8270B

QC Batch:QC98266000 Test:SVOC

Rpt Basis:none

Date Approved

Prep Meth: SW846-3520

Analyzed:09/17/98 00:00:00 R J WAWRO

Approver: C J VANMETER

09/24/98 16:47

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	100		ug/L	U		100	1	P	
1,2-Dichlorobenzene	100		ug/L	U		100	1	P	
1,3-Dichlorobenzene	100		ug/L	U		100	1	P	
1,4-Dichlorobenzene	100		ug/L	U		100	1	P	
5-Trichlorophenol	100		ug/L	U		100	1	P	

Official Report

Byte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2-Trichlorophenol	100		ug/L	U		100	1	P	
2,4-Dichlorophenol	100		ug/L	U		100	1	P	
2,4-Dimethylphenol	100		ug/L	U		100	1	P	
2,4-Dinitrophenol	500		ug/L	JU		500	1	P	
2,4-Dinitrotoluene	100		ug/L	U		100	1	P	
2,6-Dinitrotoluene	100		ug/L	U		100	1	P	
2-Chloronaphthalene	100		ug/L	U		100	1	P	
2-Chlorophenol	100		ug/L	U		100	1	P	
2-Methyl-4,6-dinitrophenol	500		ug/L	U		500	1	P	
2-Methylphenol	100		ug/L	U		100	1	P	
2-Nitrophenol	100		ug/L	U		100	1	P	
3(4)-Methylphenol	100		ug/L	U		100	1	P	
4-Bromophenyl phenyl ether	100		ug/L	U		100	1	P	
4-Chloro-3-methylphenol	200		ug/L	U		200	1	P	
4-Chlorophenylphenyl ether	100		ug/L	U		100	1	P	
4-Nitrophenol	500		ug/L	U		500	1	P	
Acenaphthene	100		ug/L	U		100	1	P	
Acenaphthylene	100		ug/L	U		100	1	P	
Anthracene	100		ug/L	U		100	1	P	
Benzo(a)anthracene	100		ug/L	U		100	1	P	
Benzo(a)pyrene	100		ug/L	U		100	1	P	
Benzo(b)fluoranthene	100		ug/L	U		100	1	P	
Benzo(ghi)perylene	100		ug/L	JU		100	1	P	
Benzo(k)fluoranthene	100		ug/L	U		100	1	P	
Bis(2-chloroethoxy)methane	100		ug/L	U		100	1	P	
2-chloroethyl ether	100		ug/L	U		100	1	P	
2-chloroisopropyl ether	100		ug/L	U		100	1	P	
Bis(2-ethylhexyl)phthalate	100		ug/L	U		100	1	P	
Butylbenzylphthalate	100		ug/L	U		100	1	P	
Chrysene	100		ug/L	U		100	1	P	
Di-n-butylphthalate	100		ug/L	U		100	1	P	
Di-n-octylphthalate	100		ug/L	U		100	1	P	
Dibenz(a,h)anthracene	100		ug/L	JU		100	1	P	
Diethylphthalate	100		ug/L	U		100	1	P	
Dimethylphthalate	100		ug/L	U		100	1	P	
Diphenyldiazene	100		ug/L	U		100	1	P	
Fluoranthene	100		ug/L	U		100	1	P	
Fluorene	100		ug/L	U		100	1	P	
Hexachlorobenzene	100		ug/L	U		100	1	P	
Hexachlorobutadiene	100		ug/L	U		100	1	P	
Hexachlorocyclopentadiene	NR		ug/L				1	P	
Hexachloroethane	100		ug/L	U		100	1	P	
Indeno(1,2,3-cd)pyrene	100		ug/L	JU		100	1	P	
Isophorone	100		ug/L	U		100	1	P	
N-Nitroso-di-n-propylamine	100		ug/L	U		100	1	P	
N-Nitrosodimethylamine	100		ug/L	U		100	1	P	
N-Nitrosodiphenylamine	100		ug/L	U		100	1	P	
Naphthalene	100		ug/L	U		100	1	P	
Nitrobenzene	100		ug/L	U		100	1	P	
Pentachlorophenol	500		ug/L	U		500	1	P	
Phenanthrene	100		ug/L	U		100	1	P	

Official Report

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1	100		ug/L	U		100	1	P	
Pyrene	100		ug/L	U		100	1	P	
Pyridine	100		ug/L	U		100	1	P	

Comments:

There were 2 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(22%) and hexachlorocyclopentadiene(23%).

Three compounds failed established recovery criteria of 30% in the continuing calibration check and are also qualified as estimates, 'J'. These compounds were indeno(1,2,3-cd)pyrene(44%), dibenzo(a,h)anthracene(60%)

and benzo(g,h,i)perylene(39%).

Hexachlorocyclopentadiene is not reported (NR) because of continuing difficulties in the liquid/liquid extraction procedure for this compound. Recoveries of hexachlorocyclopentadiene from laboratory control and matrix spiked samples have historically been very poor.

Recovery of the last surrogate compound, terphenyl-d14, was slightly below established criteria in the sample extract but was acceptable in the MS extract of this sample.

Analy Meth:SW846-8260A

QC Batch:QC98245013 Test:VOA

Rpt Basis:none

Date Approved

Meth:

Analyzed:08/30/98 00:00:00 B D FUHR

Approver: C J VANMETER

09/04/98 17:13

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	20		ug/L	U	C	20	10		
1,1,2,2-Tetrachloroethane	20		ug/L	U	C	20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	20		ug/L	U	C	20	10		
1,1,2-Trichloroethane	20		ug/L	U	C	20	10		
1,1-Dichloroethane	20		ug/L	U	C	20	10		
1,1-Dichloroethene	20		ug/L	U	C	20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/L	U	C	40	10		
1,2-Dichlorobenzene	20		ug/L	U	C	20	10		
1,2-Dichloroethane	20		ug/L	U	C	20	10		
1,2-Dimethylbenzene	20		ug/L	U	C	20	10		
1,3 (1,4) -Dimethylbenzene	20		ug/L	U	C	20	10		
1,3-Dichlorobenzene	20		ug/L	U	C	20	10		
1,4-Dichlorobenzene	20		ug/L	U	C	20	10		
2-Butanone	500		ug/L	U	C	500	10		
4-Methyl-2-pentanone	500		ug/L	U	C	500	10		
Acetone	500		ug/L	U	C	500	10		
Benzene	20		ug/L	U	C	20	10		
Bromodichloromethane	20		ug/L	U	C	20	10		
Bromoform	20		ug/L	U	C	20	10		
Bromomethane	40		ug/L	U	C	40	10		
Carbon disulfide	20		ug/L	U	C	20	10		
Carbon tetrachloride	20		ug/L	U	C	20	10		
Chlorobenzene	20		ug/L	U	C	20	10		

Official Report

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Acetone	40		ug/L	U	C	40	10		
Chloroform	20		ug/L	U	C	20	10		
Chloromethane	40		ug/L	U	C	40	10		
Dibromochloromethane	20		ug/L	U	C	20	10		
Ethylbenzene	20		ug/L	U	C	20	10		
Methylene chloride	20		ug/L	U	C	20	10		
Tetrachloroethene	20		ug/L	U	C	20	10		
Toluene	20		ug/L	U	C	20	10		
Trichloroethene	20		ug/L	U	C	20	10		
Trichlorofluoromethane	40		ug/L	U	C	40	10		
Vinyl chloride	10		ug/L	U	C	10	10		
cis-1,2-Dichloroethene	20		ug/L	U	C	20	10		
trans-1,2-Dichloroethene	20		ug/L	U	C	20	10		

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth: PORTS-OA97333006	QC Batch: QC98266003 Test: AB-ACT-GPC	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 09/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	09/24/98 15:41

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec	Lvl
Alpha activity	<0.3		pCi/ml				0.3		
Beta activity	3.5		pCi/ml				0.7		

Analy Meth: PORTS-XP4-TS-RL7380	QC Batch: QC98266001 Test: TC99-ACT-LS	Rpt Basis: none	Date Appr
Prep Meth:	Analyzed: 09/22/98 00:00:00 J P BREWSTER	Approver: B W SHORT	09/24/98 15:41

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec	Lvl
Technetium-99	<1.1		pCi/ml				1.1		

Analy Meth: PORTS-XP4-TS-RL7720ug	QC Batch: QC98273006 Test: TOTAL-U-AS	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 09/23/98 00:00:00 R J ANDRE	Approver: B W SHORT	09/30/98 14:24

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec	Lvl
Uranium	0.32	0.064	ug/ml						
Uranium-235	1.3	0.88	wt %						

Waste Stream Number: SW-16

Waste Stream Title: Glass Media

Customer Smpl Id: VER46877001
:X-04-WM BJC09825
Analyses: SOLID
Customer: J A APPLGATE
COC#: 55300
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: SOLID
Protocol: RCRA
Status: APPROVED
Location:

Sampled: 04/03/98 13:50:00
Received: 04/06/98 08:50:48
Needed: 05/11/98 00:00:00
Approved: 05/11/98 14:05:42

Analy Meth: SW846-3050A
Prep Meth:

QC Batch: Test: 3050APREP
Analyzed: 04/24/98 00:00:00 M L STEWART

Rpt Basis: none
Approver: D K PEREZ

Analy Meth: SW846-6010A
Prep Meth: SW846-3050A

QC Batch: Test: 6010AMETALS5
Analyzed: 05/07/98 00:00:00 T E SHOOK

Rpt Basis: none
Approver: D K PEREZ

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	339		mg/kg	B			10		
Antimony	16.9		mg/kg	*NU			10		
Arsenic	22.7		mg/kg	U			10		N
Barium	4.1		mg/kg	B			10		N
Beryllium	1.1		mg/kg	U			10		
Cadmium	300		mg/kg				10		Y
Calcium	458		mg/kg	B			10		
Chromium	11.2		mg/kg	B			10		N
Copper	3.3		mg/kg	U			10		
Cobalt	31.3		mg/kg	BN			10		
Iron	1000		mg/kg	B			10		
Lead	127		mg/kg	B			10		Y
Magnesium	98.9		mg/kg	B			10		
Manganese	40.6		mg/kg	B			10		
Molybdenum	3.9		mg/kg	BN			10		
Nickel	3120		mg/kg				10		
Potassium	322		mg/kg	JU			10		
Selenium	34.9		mg/kg	U			10		Y
Silver	32.2		mg/kg	B			10		N
Sodium	529		mg/kg	B			10		
Thallium	23.6		mg/kg	U			10		
Vanadium	2.4		mg/kg	U			10		
Zinc	28.4		mg/kg	B			10		

Comments: QC File: 98080371

Potassium qualified as estimate due to calibration verification not meeting acceptance limits.

Meth:SW846-7470A QC Batch: Test:HG7470A Rpt Basis:none
Prep Meth: Analyzed:04/16/98 00:00:00 R B COLLEY Approver: D K PEREZ

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	0.025		mg/kg	U			1		N

Comments: QC File: 98080313

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth:SW846-3540 QC Batch:QC98127004 Test:ORGEXT-SVOC Rpt Basis:none
Prep Meth: Analyzed:04/17/98 00:00:00 D K SCAGGS Approver: C J VANMETER

Analy Meth:SW846-8270B QC Batch:QC98127006 Test:SVOC Rpt Basis:none
Prep Meth: SW846-3540 Analyzed:05/04/98 00:00:00 R J WAWRO Approver: C J VANMETER

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
p-Trichlorobenzene	480		ug/kg	U		480	1		
1,2-Dichlorobenzene	480		ug/kg	U		480	1		
1,3-Dichlorobenzene	480		ug/kg	U		480	1		
1,4-Dichlorobenzene	480		ug/kg	U		480	1		
2,4,5-Trichlorophenol	480		ug/kg	U		480	1		
2,4,6-Trichlorophenol	480		ug/kg	U		480	1		
2,4-Dichlorophenol	480		ug/kg	U		480	1		
2,4-Dimethylphenol	480		ug/kg	U		480	1		
2,4-Dinitrophenol	2400		ug/kg	JU		2400	1		
2,4-Dinitrotoluene	480		ug/kg	U		480	1		
2,6-Dinitrotoluene	480		ug/kg	U		480	1		
2-Chloronaphthalene	480		ug/kg	U		480	1		
2-Chlorophenol	480		ug/kg	U		480	1		
2-Methyl-4,6-dinitrophenol	2400		ug/kg	JU		2400	1		
2-Methylphenol	480		ug/kg	U		480	1		
2-Nitrophenol	480		ug/kg	U		480	1		
3(4)-Methylphenol	480		ug/kg	U		480	1		
4-Bromophenyl phenyl ether	480		ug/kg	U		480	1		
4-Chloro-3-methylphenol	960		ug/kg	U		960	1		
4-Chlorophenylphenyl ether	480		ug/kg	U		480	1		
4-Nitrophenol	2400		ug/kg	U		2400	1		
Acenaphthene	480		ug/kg	U		480	1		
Acenaphthylene	480		ug/kg	U		480	1		
Anthracene	480		ug/kg	U		480	1		
10(a)anthracene	480		ug/kg	U		480	1		

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Benzo(a)pyrene	480		ug/kg	U		480	1		
Benzo(b)fluoranthene	480		ug/kg	U		480	1		
Benzo(ghi)perylene	480		ug/kg	JU		480	1		
Benzo(k)fluoranthene	480		ug/kg	U		480	1		
Bis(2-chloroethoxy)methane	480		ug/kg	U		480	1		
Bis(2-chloroethyl) ether	480		ug/kg	U		480	1		
Bis(2-chloroisopropyl) ether	480		ug/kg	U		480	1		
Bis(2-ethylhexyl)phthalate	1600		ug/kg			480	1		
Butylbenzylphthalate	480		ug/kg	U		480	1		
Chrysene	480		ug/kg	U		480	1		
Di-n-butylphthalate	480		ug/kg	U		480	1		
Di-n-octylphthalate	480		ug/kg	U		480	1		
Dibenz(a,h)anthracene	480		ug/kg	JU		480	1		
Diethylphthalate	480		ug/kg	U		480	1		
Dimethylphthalate	480		ug/kg	U		480	1		
Diphenyldiazene	480		ug/kg	U		480	1		
Fluoranthene	480		ug/kg	U		480	1		
Fluorene	480		ug/kg	U		480	1		
Hexachlorobenzene	480		ug/kg	U		480	1		
Hexachlorobutadiene	480		ug/kg	U		480	1		
Hexachlorocyclopentadiene	480		ug/kg	JU		480	1		
Hexachloroethane	480		ug/kg	U		480	1		
Indeno(1,2,3-cd)pyrene	480		ug/kg	JU		480	1		
Isophorone	480		ug/kg	U		480	1		
N-Nitroso-di-n-propylamine	480		ug/kg	U		480	1		
N-Nitrosodimethylamine	480		ug/kg	U		480	1		
N-Nitrosodiphenylamine	480		ug/kg	U		480	1		
Naphthalene	480		ug/kg	U		480	1		
Nitrobenzene	480		ug/kg	U		480	1		
Pentachlorophenol	2400		ug/kg	U		2400	1		
Phenanthrene	480		ug/kg	U		480	1		
Phenol	480		ug/kg	U		480	1		
Pyrene	480		ug/kg	U		480	1		
Pyridine	480		ug/kg	U		480	1		

Comments:

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(32.7%), 4,6-dinitro-2-methylphenol(17.4%), and hexachlorocyclopentadiene(22.1%).

Three compounds exceeded %RSD (30%) criteria for the continuing calibration check and are also qualified with a 'J'. These compounds are indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene.

Method: SW846-8260A QC Batch: QC98110010 Test: VOA Rpt Basis: none
 Precip: Analyzed: 04/16/98 00:00:00 J N STRICKLAND Approver: C J VANMETER

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	2		ug/kg	U		2	1		
1,1,2,2-Tetrachloroethane	2		ug/kg	JU		2	1		
1,1,2-Trichloro-1,2,2-trifluoroethane	2		ug/kg	U		2	1		
1,1,2-Trichloroethane	2		ug/kg	U		2	1		
1,1-Dichloroethane	2		ug/kg	U		2	1		
1,1-Dichloroethene	2		ug/kg	U		2	1		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	4		ug/kg	U		4	1		
1,2-Dichlorobenzene	2		ug/kg	U		2	1		
1,2-Dichloroethane	2		ug/kg	U		2	1		
1,2-Dimethylbenzene	2		ug/kg	U		2	1		
1,3 (1,4)-Dimethylbenzene	2		ug/kg	U		2	1		
1,3-Dichlorobenzene	2		ug/kg	U		2	1		
1,4-Dichlorobenzene	2		ug/kg	U		2	1		
2-Butanone	50		ug/kg	U		50	1		
4-Methyl-2-pentanone	50		ug/kg	U		50	1		
Acetone	50		ug/kg	U		50	1		
Benzene	2		ug/kg	U		2	1		
Bromodichloromethane	2		ug/kg	U		2	1		
Bromoform	2		ug/kg	U		2	1		
Bromomethane	4		ug/kg	U		4	1		
Carbon disulfide	2		ug/kg	U		2	1		
Carbon tetrachloride	2		ug/kg	U		2	1		
Chlorobenzene	2		ug/kg	U		2	1		
Chloroethane	4		ug/kg	U		4	1		
Chloroform	2		ug/kg	U		2	1		
Chloromethane	4		ug/kg	U		4	1		
Dibromochloromethane	2		ug/kg	U		2	1		
Ethylbenzene	2		ug/kg	U		2	1		
Methylene chloride	2		ug/kg	U		2	1		
Tetrachloroethene	2		ug/kg	U		2	1		
Toluene	2		ug/kg	U		2	1		
Trichloroethene	2		ug/kg	U		2	1		
Trichlorofluoromethane	4		ug/kg	U		4	1		
Vinyl chloride	1		ug/kg	U		1	1		
cis-1,2-Dichloroethene	2		ug/kg	U		2	1		
trans-1,2-Dichloroethene	2		ug/kg	U		2	1		

Retention Estimated

TIC Name	Fn	Time	Unit	Concentr	Qual	Unit
2-Ethyl-1-hexanol		25.16 min		30	J	ug/kg

Comments: A dehydrohalogenation process occurred causing 1,1,2,2-tetrachloroethane being converted to trichloroethane on the matrix spike. The compound 1,1,2,2-tetrachloroethane is estimated "J" due to a 15% recovery on the MS.

Dibromofluoromethane failed the PORTS established surrogate recovery limits (79% -- lower limit-86%).

Modifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Detection
it (DL).

Analy Meth:PORTS-XP4-TS-RL7280

QC Batch:QC98126003 Test:AB-ACT-GPC

Rpt Basis:none

Prep Meth:

Analyzed:05/04/98 00:00:00 J P BREWSTER

Approver: B W SHORT

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	39		pCi/g				
Beta activity	123		pCi/g				

Analy Meth:PORTS-XP4-TS-RL7385

QC Batch:QC98126001 Test:TC99-ACT-LS

Rpt Basis:none

Prep Meth:

Analyzed:05/04/98 00:00:00 J P BREWSTER

Approver: B W SHORT

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	119.5		pCi/g				

Analy Meth:PORTS-XP4-TS-RL7710ug

QC Batch:QC98131001 Test:TOTAL-U-AS

Rpt Basis:none

Prep Meth:

Analyzed:05/10/98 00:00:00 R J ANDRE

Approver: B W SHORT

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	7.02	0.91	ug/g				
Uranium-235	12	2.5	wt %				

Waste Stream Number: SW-17

Waste Stream Title: Metal Shavings

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 910918-021 Project: WMGT RFD Customer Sample ID: RFD-4148
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 18-SEP-1991 Date Sample Received: 18-SEP-1991
Sampled By: C ATKINSON Date Sample Completed: 22-SEP-1992
Material Description: METAL SCRAPS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	Arsenic	0.05		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Barium	0.14		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Cadmium	0.09		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Chromium	0.02		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Lead	19.0*		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Mercury	< 0.01		mg/L	MR KELLEY	31-OCT-1991	9108A099
	Selenium	0.07		mg/L	MR KELLEY	11-FEB-1992	9208P004
	Silver	0.40		mg/L	MR KELLEY	31-OCT-1991	9108A099
TSD515-500	Uranium (Waste)	3.6		ug/g	DK PEREZ	26-SEP-1991	092591-017

***** Comments from the Chemical Technology Department *****

* ected for matrix spike recovery.
* corrected for matrix spike recovery.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - Spike sample recovery is not within control limits.
 - The reported value is unusable. The value is for informational purposes only.
- The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: D. K. Perez (Environmental and Industrial Hygiene Laboratory)
A. J. Saraceno (Chemical Technology Department)
Date Approved: 22-SEP-1992

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 921030-031 Project: WMGT WMS Customer Sample ID: WMS-892
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 30-OCT-1992 Date Sample Received: 30-OCT-1992
Sampled By: AR SELBEE Date Sample Completed: 13-JAN-1993
Material Description: BEARING BRASS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	Arsenic	< 0.26		mg/L	MR KELLEY	10-NOV-1992	92160258
	Barium	0.06		mg/L	MR KELLEY	10-NOV-1992	92160258
	Cadmium	< 0.03		mg/L	MR KELLEY	10-NOV-1992	92160258
	Chromium	< 0.05		mg/L	MR KELLEY	10-NOV-1992	92160258
	Lead	399		mg/L	MR KELLEY	10-NOV-1992	92160258
	Mercury	< 0.01		mg/L	MR KELLEY	10-NOV-1992	92160258
	Selenium	< 0.54		mg/L	MR KELLEY	10-NOV-1992	92160258
	Silver	< 0.02		mg/L	MR KELLEY	10-NOV-1992	92160258

***** Comments from the TCLP Laboratory *****

Lead exceeded the regulatory limit of 5.0 mg/L.

rganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte

Organic Data Reporting Qualifiers:

Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: D. E. Boyd (TCLP Laboratory)

Date Approved: 13-JAN-1993

104-24

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

Analysis ID: 921030-032 Project: WMG T WMS Customer Sample ID: WMS-893
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 30-OCT-1992 Date Sample Received: 30-OCT-1992
Sampled By: AR SELBEE Date Sample Completed: 13-JAN-1993
Material Description: PHOS. BRONZE

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	Arsenic	< 0.26		mg/L	MR KELLEY	11-NOV-1992	92160261
	Barium	0.07		mg/L	MR KELLEY	11-NOV-1992	92160261
	Cadmium	< 0.03		mg/L	MR KELLEY	11-NOV-1992	92160261
	Chromium	< 0.04		mg/L	MR KELLEY	11-NOV-1992	92160261
	Lead	6.5		mg/L	MR KELLEY	11-NOV-1992	92160261
	Mercury	< 0.01		mg/L	MR KELLEY	11-NOV-1992	92160261
	Selenium	< 0.7		mg/L	MR KELLEY	11-NOV-1992	92160261
	Silver	< 0.02		mg/L	MR KELLEY	11-NOV-1992	92160261

***** Comments from the TCLP Laboratory *****

Lead exceeded the regulatory limit of 5.0 mg/L.

Qualitative Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- Duplicate analysis is not within control limits.
- Correlation coefficient for MSA is less than 0.995.
- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte

Organic Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- U - Analyte was found in the reagent blank as well as the sample.
 - J - Indicates an estimated value.
 - ND - Not detected.
 - NR - Not reported.
 - NA - Not analyzed.
 - A - Aldol condensation product.
 - D - Secondary dilution.
 - E - Exceeds initial calibration range.

Laboratory Manager: D. E. Boyd (TCLP Laboratory)

Date Approved: 13-JAN-1993

Waste Stream Number: SW-18

Waste Stream Title: Brick/Concrete and Masonry Waste

Waste stream SW-18 is concrete, brick and other masonry material that is removed from spill sites of listed chemical wastes or historically contaminated areas. Each drum is assigned the appropriate waste code based on the listing of the spilled chemical.

Waste Stream Number: SW-19

Waste Stream Title: Miscellaneous Burnable Debris

mer Smpl Id: VER36047001
act:X-04-WM BJC09824
Subproj Analyses:SOLID
Customer:J A APPLGATE
COC#: 54149
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: SOLID
Protocol:RCRA
Status: APPROVED
Location:

Sampled: 04/28/98 09:45:00
Received: 04/28/98 09:46:08
Needed: 06/02/98 00:00:00
Approved: 06/02/98 18:28:52

Analy Meth:SW846-3050A
Prep Meth:

QC Batch: Test:3050APREP
Analyzed:05/05/98 00:00:00 M L STEWART

Rpt Basis:none
Approver: D K PEREZ

Analy Meth:SW846-6010A
Prep Meth: SW846-3050A

QC Batch: Test:6010AMETALS5
Analyzed:05/28/98 00:00:00 E L SIMPSON

Rpt Basis:none
Approver: D K PEREZ

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	2540		mg/kg	B			1		
Antimony	59.9		mg/kg	BN			1		
Arsenic	108		mg/kg	BJ			1		Y
Barium	26.7		mg/kg	B			1		N
Beryllium	1.3		mg/kg	B			1		
Cadmium	9.6		mg/kg	B			1		N
Calcium	64.1		mg/kg	NU			1		
Chromium	388		mg/kg	B			1		Y
Cobalt	7.1		mg/kg	B			1		
Copper	3410		mg/kg				1		
Iron	42800		mg/kg	B			1		
Lead	394		mg/kg	B			1		Y
Magnesium	563		mg/kg	B			1		
Manganese	140		mg/kg	B			1		
Molybdenum	205		mg/kg	B			1		
Nickel	2640		mg/kg				1		
Potassium	378		mg/kg	BN			1		
Selenium	33.6		mg/kg	NU			1		Y
Silver	75.6		mg/kg	*			1		N
Sodium	1550		mg/kg	B			1		
Thallium	22.7		mg/kg	NU			1		
Vanadium	2.3		mg/kg	NU			1		
Zinc	80.0		mg/kg	B			1		

Comments: File: 98080419

As qualified as estimate due to interference check not meeting acceptance limits.

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
Qualify data for the sample as estimated.
Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument

tection Limit (IDL).

Analy Meth:SW846-3540 QC Batch:QC98127005 Test:ORGE XT-SVOC Rpt Basis:none
Prep Meth: Analyzed:04/29/98 00:00:00 D K SCAGGS Approver: B D FUHR

Comments: A lower sample mass was used to prevent sample matrix interference problems with this extraction.

Analy Meth:SW846-8270B QC Batch:QC98153000 Test:SVOC Rpt Basis:none
Prep Meth: SW846-3540 Analyzed:05/27/98 00:00:00 R J WAWRO Approver: C J VANMETER

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	16000		ug/kg	U		16000	8		
1,2-Dichlorobenzene	16000		ug/kg	U		16000	8		
1,3-Dichlorobenzene	16000		ug/kg	U		16000	8		
1,4-Dichlorobenzene	16000		ug/kg	U		16000	8		
2,4,5-Trichlorophenol	NR		ug/kg			NR	8		
2,4,6-Trichlorophenol	NR		ug/kg			NR	8		
2,4-Dichlorophenol	NR		ug/kg			NR	8		
2,4-Dimethylphenol	NR		ug/kg			NR	8		
2,4-Dinitrophenol	80000		ug/kg	JU		80000	8		
2,4-Dinitrotoluene	NR		ug/kg			NR	8		
2,6-Dinitrotoluene	16000		ug/kg	U		16000	8		
1-Chloronaphthalene	16000		ug/kg	U		16000	8		
1-Nitrophenol	NR		ug/kg			NR	8		
2-Methyl-4,6-dinitrophenol	16000		ug/kg	U		16000	8		
2-Methylphenol	16000		ug/kg	JU		16000	8		
2-Nitrophenol	16000		ug/kg	U		16000	8		
3(4)-Methylphenol	16000		ug/kg	JU		16000	8		
4-Bromophenyl phenyl ether	16000		ug/kg	U		16000	8		
4-Chloro-3-methylphenol	NR		ug/kg			NR	8		
4-Chlorophenylphenyl ether	16000		ug/kg	U		16000	8		
4-Nitrophenol	NR		ug/kg			NR	8		
Acenaphthene	16000		ug/kg	JU		16000	8		
Acenaphthylene	NR		ug/kg			NR	8		
Anthracene	NR		ug/kg			NR	8		
Benzo(a)anthracene	NR		ug/kg			NR	8		
Benzo(a)pyrene	NR		ug/kg			NR	8		
Benzo(b)fluoranthene	NR		ug/kg			NR	8		
Benzo(ghi)perylene	NR		ug/kg			NR	8		
Benzo(k)fluoranthene	NR		ug/kg			NR	8		
Bis(2-chloroethoxy)methane	16000		ug/kg	U		16000	8		
Bis(2-chloroethyl) ether	16000		ug/kg	U		16000	8		
Bis(2-chloroisopropyl) ether	16000		ug/kg	U		16000	8		
Bis(2-ethylhexyl)phthalate	360000		ug/kg			16000	8		
Butylbenzylphthalate	16000		ug/kg	U		16000	8		
Chrysene	NR		ug/kg			NR	8		
Di-n-butylphthalate	16000		ug/kg	U		16000	8		
Di-n-octylphthalate	NR		ug/kg			NR	8		

'yte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
az(a,h)anthracene	NR		ug/kg			NR	8		
Diethylphthalate	16000		ug/kg	U		16000	8		
Dimethylphthalate	16000		ug/kg	U		16000	8		
Diphenyldiazene	16000		ug/kg	JU		16000	8		
Fluoranthene	16000		ug/kg	U		16000	8		
Fluorene	16000		ug/kg	U		16000	8		
Hexachlorobenzene	16000		ug/kg	U		16000	8		
Hexachlorobutadiene	16000		ug/kg	U		16000	8		
Hexachlorocyclopentadiene	16000		ug/kg	U		16000	8		
Hexachloroethane	16000		ug/kg	U		16000	8		
Indeno(1,2,3-cd)pyrene	NR		ug/kg			NR	8		
Isophorone	16000		ug/kg	U		16000	8		
N-Nitroso-di-n-propylamine	16000		ug/kg	U		16000	8		
N-Nitrosodimethylamine	16000		ug/kg	U		16000	8		
N-Nitrosodiphenylamine	NR		ug/kg			NR	8		
Naphthalene	16000		ug/kg	U		16000	8		
Nitrobenzene	16000		ug/kg	U		16000	8		
Pentachlorophenol	NR		ug/kg			NR	8		
Phenanthrene	16000		ug/kg	U		16000	8		
Phenol	NR		ug/kg			NR	8		
Pyrene	NR		ug/kg			NR	8		
Pyridine	16000		ug/kg	U		16000	8		

Comments: This sample was analyzed at a 2-fold and an 8-fold dilution of the original extract concentrate because of numerous problems with recoveries of QC compounds. These were:

1. The last internal standard was almost -100% for the 2xD and the 8xD injections. The sample matrix was such that perylene-d12 could not be detected in the 2xDiluted sample and only slightly detectable in the 8xD samples.
2. The third internal standard, acenaphthene-d10, area recovery was -67% in the 2xD of the MSD, but was acceptable in the 2xD sample and both 8xD injections.
3. All 3 acid surrogate compounds failed recovery criteria in all GC runs. Therefore all acid compounds will be qualified as an estimate, 'J', as a minimum qualification.
4. Most of the acid matrix spike compounds also exhibited extremely poor recoveries in both the 2xD and 8xD GC runs. If recovery was below 10% the compound will not be reported, 'NR'. But if the recovery was below method criteria but above 10%, the compound will be reported as an estimate, 'J'.
5. Many of the remaining base or neutral compounds also had poor recoveries in the 2xD and 8xD injections of the matrix spiked sample, and will also be qualified as 'NR' or 'J'.

The 8-fold dilution run will be used for reporting data because of

only one internal standard area was low, and several more MS target analytes had acceptable recoveries.

The sample had four abundant TICs, dodecane(~800ppm), tridecane (~3000ppm), tetradecane (~3000ppm) and tributylphosphate(~4000ppm),

which may have caused some of the above problems when coeluting with target analytes. But these four TICs would not have normally caused the poor recovery of the last internal standard, indicating the presence of very potent matrix altering components.

The extremely low recovery for the last internal standard would cause quantitation problems for target analytes associated with it. If the last internal standard was not found, then perhaps the other target analytes eluting in the same retention time range were also diminished.

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(27%), 4-nitrophenol(17%), and acenaphthylene(15%).

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Detection Limit (DL).

Analy Meth:PORTS-XP4-TS-RL7280		QC Batch:QC98152004 Test:AB-ACT-GPC				Rpt Basis:none	
Prep Meth:		Analyzed:05/28/98 00:00:00 J J SISLER				Approver: B W SHORT	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	242000		pCi/g	J		18	
Beta activity	10800		pCi/g	J		54	

Analy Meth:PORTS-XP4-TS-RL7385		QC Batch:QC98152003 Test:TC99-ACT-LS				Rpt Basis:none	
Prep Meth:		Analyzed:05/28/98 00:00:00 J J SISLER				Approver: B W SHORT	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	14000		pCi/g			70	

Analy Meth:PORTS-XP4-TS-RL7710ug		QC Batch:QC98142007 Test:TOTAL-U-AS				Rpt Basis:none	
Prep Meth:		Analyzed:05/18/98 00:00:00 R J ANDRE				Approver: B W SHORT	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	15100	2370	ug/g				
Uranium-235	24	6	wt %				

EPA Qualifiers:

J - Indicates an estimated value.

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***** END OF REPORT *****

Waste Stream Number: SW-20

Waste Stream Title: Soil From Non-ER Activities

SW-20

Portsmouth Gaseous Diffusion Plant

Technical Operations Division

Analysis Results

mer: ENV. RESTORATION

Matl. Description: ACCUMULATED WASTE

Project Number: PAWC

Subproject Number: 1T

Analysis	Units	940111-021 PORTAW4830	940111-022 PORTAW1422	940207-030 PORTAW4161
1,1,1-Trichloroethane	ug/Kg	<4	<8	<20
1,1,2,2-Tetrachloroethane	ug/Kg	<2000	<8	<20
1,1,2-Trichloroethane	ug/Kg	<4	<8	<20
1,1-Dichloroethene	ug/Kg	<4	<8	<20
1,2-Dichlorobenzene	mg/Kg	0.9U	2.4U	1.1U
1,2-Dichloroethane	ug/Kg	<4	<8	<20
1,2-Dichloroethenes (cis & t)	ug/Kg	<4	<8	<20
1,4-Dichlorobenzene	mg/Kg	0.9U	2.4U	1.1U
2,4,5-TP (Silvex)	ug/g	0.10JU	0.50U	0.05U
2,4,5-Trichlorophenol	mg/Kg	0.9U	2.4U	1.1U
2,4,6-Trichlorophenol	mg/Kg	0.9U	2.4U	1.1U
2,4-D	ug/g	0.10JU	0.50U	0.05U
2,4-Dinitrotoluene	mg/Kg	3.6U	9.6U	4.4U
2-Butanone	ug/Kg	<200	<400	<1000
2-Ethoxyethanol	mg/Kg	0.9U	2.4U	1.1U
2-Nitropropane	ug/Kg	<4	<200	<500
4-Methyl-2-pentanone	ug/Kg	<4	<80	<200
ny	ug/Kg	<200	<400	<1000
	MG/KG	1880	38.7N	209
	MG/KG	11.6UN	37.2N	26700
Aroclor-1242	ug/g	NR	NR	
Aroclor-1248	ug/g	NR	NR	
Aroclor-1254	ug/g	NR	NR	
Aroclor-1260	ug/g	NR	NR	
Aroclor-1268	ug/g	NR	NR	
Arsenic	mg/Kg	133	2.5	6.4N
Ash	%	55.5	6.6	95.63
BTU	Btu/lb	<50	2674	COMMENT
Barium	MG/KG	10.2*	0.40N*	12.2
Benzene	ug/Kg	<4	<8	<20
Beryllium	MG/KG	0.39U	0.08U	0.79U
Cadmium	MG/KG	1.4U	0.29U	2.9U
Calcium	MG/KG	163000*	432*	255
Carbon Disulfide	ug/Kg	<4	22	<20
Carbon Tetrachloride	ug/Kg	<4	<8	<20
Chloride	mg/kg	304	458	335
Chlorobenzene	ug/Kg	<4	<8	<20
Chloroethane	ug/Kg	<8	<16	<40
Chloroform	ug/Kg	<4	<8	<20
Chloromethane	ug/Kg	<8	<16	<40
Chromium	MG/KG	47.8N	0.49	1110
Cobalt	MG/KG	16.0	0.65N	64.9
Copper	MG/KG	12700	1.2	48900
	mg/Kg	0.9U	2.4U	1.1U
	mg/kg	<1.0	<1.0	<1.0UJ

Cyclohexanone	ug/Kg	<1000	<2000	<5000
Dichlorodifluoromethane	ug/Kg	<4	<8	<20
Ethyl Acetate	ug/g	<0.005	<2.500	<0.050
Ethyl benzene	ug/g	<0.005	<2.500	<0.050
Ethyl ether	ug/Kg	<4	<80	<200
Flash Point	Deg F			
Fluoride	mg/kg	2700	111	30.9
Freon 113	ug/Kg	<4	<8	<20
Freon 114	ug/Kg	<4	<8	<20
Gross Alpha	pCi/g	<9	<1.4	6
Gross Beta	pCi/g	<13	<3.4	<6
Heptachlor	ug/g	<0.005	<2.500	<0.050
Heptachlor epoxide	ug/g	<0.005	<2.500	<0.050
Hexachlorobenzene	mg/Kg	0.9U	2.4U	1.1U
Hexachlorobutadiene	mg/Kg	0.9U	2.4U	1.1U
Hexachloroethane	mg/Kg	0.9U	2.4U	1.1U
Iron	MG/KG	11500	404	188000
Isobutyl alcohol	ug/Kg	<10	<4000	<10000
Lead	MG/KG	15.4N	2.2	700
Magnesium	MG/KG	4020	93.1N	179N
Manganese	MG/KG	113N	3.0N	1200
Mercury	mg/Kg	46.0N	43.7N	.05U
Methoxychlor	ug/g	<0.005	<2.500	<0.050
Methylene Chloride	ug/Kg	<2000	<8	<20
Moisture	%	42.5	70.3	4.1
Nitrobenzene	ug/Kg	<40	<4000	<10000
Np-237	MG/KG	3170	4.7N	4920*
Np-238	mg/Kg	0.9U	2.4U	1.1U
Np-239/240	pCi/g	<0.01	<0.01	<0.04
Oil & Grease	%	<0.5	1.3	9.2
Paint Filter Test		PASS	PASS	PASS
Particle Size		COMPLETE	NA	COMMENT
Pentachlorophenol	mg/Kg	3.6U	9.6U	4.4U
Potassium	MG/KG	18000	690N	249UN
Pu-238	pCi/g	<0.01	<0.01	<0.01
Pu-239/240	pCi/g	<0.01	<0.01	<0.01
Pyridine	mg/Kg	0.9U	2.4U	1.1U
Selenium	mg/Kg	1.0U	1.0U	1.4N
Silver	mg/Kg	7.73N*	2.0UN*	9.00N
Sodium	MG/KG	42300	7760	201
Specific Gravity	g/cm3	3.226	1.326	3.096
Sulfide	mg/kg	50.0	88.0	<50.0
Sulfur	mg/Kg	70.0	5050.0	.0754
TOTAL PCB'S	ug/g	<1.0	< 14	
TOX	ug/g	14.4	132.	22.8
Technetium-99 (Total)	pCi/g	0.6	<1.3	<6
Technical Chlordane	ug/g	<0.02	<10.00	<0.20
Tetrachloroethene	ug/Kg	<100	<8	<20
Thallium	mg/Kg	1.0U	1.0U	1.0UN
Toluene	ug/Kg	<4	39	<20
Total PCB's	ug/kg		14U	4.6
Trichloroethene	ug/g	<0.10	<50.00	<1.00
Trichloroethene	ug/Kg	<4	<8	<20

Trichlorofluoromethane	ug/Kg	<4	<16	<40
U-234	pCi/g	0.38	0.3	3.21
5	pCi/g	<0.02	<0.034	0.138
	pCi/g	<0.014	<0.01	<0.17
	pCi/g	0.19	0.05	0.292
Uranium	ug/gm	0.57	0.16	0.94
Uranium-235, Wt%	% U-235	NA	NA	6.83
Vanadium	MG/KG	2.0	0.18UN	5.7
Vinyl Chloride	ug/Kg	<8	<16	<40
Xylene (total)	ug/Kg	<8	913E	<20
Zinc	MG/KG	74.3N	87.8N	303
gamma-BHC (Lindane)	ug/g	<0.005	<2.500	<0.050
pH	pH units	13.13	2.95	6.80

Analysis	Units	940207-031 PORTAW9302	940207-032 PORTAW1991	940207-033 PORTAW9506
1,1,1-Trichloroethane	ug/Kg	<10	36	<4
1,1,2,2-Tetrachloroethane	ug/Kg	<10	<4	<4
1,1,2-Trichloroethane	ug/Kg	2780E	<4	<4
1,1-Dichloroethene	ug/Kg	906E	7	<4
1,2-Dichlorobenzene	mg/Kg	15U	0.9U	1U
1,2-Dichloroethane	ug/Kg	<10	<4	<4
1,2-Dichloroethenes (cis & t)	ug/Kg	31	<4	<4
1,4-Dichlorobenzene	mg/Kg	15U	0.9U	1U
2,4,5-TP (Silvex)	ug/g	11.U	0.05U	0.05U
2,4,5-Trichlorophenol	mg/Kg	15U	0.9U	1U
2,4,6-Trichlorophenol	mg/Kg	15U	0.9U	1U
	ug/g	11.U	0.05U	0.05U
4-Nitrotoluene	mg/Kg	60U	3.6U	4U
2-Butanone	ug/Kg	<500	<200	<200
2-Ethoxyethanol	mg/Kg	15U	0.9U	1U
2-Nitropropane	ug/Kg	<250	<100	<100
4-Methyl-2-pentanone	ug/Kg	<100	<40	<40
Acetone	ug/Kg	530	<200	1120
Aluminum	MG/KG	1130	3630	29900
Antimony	MG/KG	23.0UN	23.2U	23.0UN
Aroclor-1242	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-1260	ug/g			
Aroclor-1268	ug/g			
Arsenic	mg/Kg	1.0N	7.5	6.6N
Ash	%	7.93	89.62	35.49
BTU	Btu/lb	< 50	301	138
Barium	MG/KG	0.78U	26.3	21.0
Benzene	ug/Kg	<10	<4	<4
Beryllium	MG/KG	2.0	0.78U	0.78U
Cadmium	MG/KG	2.8U	2.8U	79.2
Calcium	MG/KG	624	99300	3840
Carbon Disulfide	ug/Kg	<10	<4	<4
Carbon Tetrachloride	ug/Kg	<10	<4	<4
Chlorobenzene	mg/kg	244	1970	137
Chloroethane	ug/Kg	<10	<4	<4
Chloroethane	ug/Kg	<20	<8	<8

Chloroform	ug/Kg	<10	<4	<4
Chloromethane	ug/Kg	<20	<8	<8
Chromium	MG/KG	2.5U	5.5	1210
Cadmium	MG/KG	2.7U	2.8	23.2
Copper	MG/KG	30.4	4.0	1070
Cresols	mg/Kg	15U	0.9U	1U
Cyanide	mg/kg	<1.0UJ	<1.0UJ	4.45J
Cyclohexanone	ug/Kg	<2500	<1000	<1000
Dichlorodifluoromethane	ug/Kg	<10	<4	<4
Endrin	ug/g	<0.10	<0.005	<0.025
Endrin aldehyde	ug/g	<0.10	<0.005	<0.025
Ethyl Acetate	ug/Kg	<100	<40	<40
Ethyl benzene	ug/Kg	<10	<4	<4
Ethyl ether	ug/Kg	<25	<10	<10
Flash Point	Deg F			
Fluoride	mg/kg	12300	COMMENTS	98.9
Freon 113	ug/Kg	<10	<4	<4
Freon 114	ug/Kg	<10	<4	<4
Gross Alpha	pCi/g	8269	<6	9500
Gross Beta	pCi/g	4611	<13	18169
Heptachlor	ug/g	<0.10	<0.005	<0.025
Heptachlor epoxide	ug/g	<0.10	<0.005	<0.025
Hexachlorobenzene	mg/Kg	15U	0.9U	1U
Hexachlorobutadiene	mg/Kg	15U	0.9U	1U
Hexachloroethane	mg/Kg	15U	0.9U	1U
Iron	MG/KG	2190	8260	21100
Isobutyl alcohol	ug/Kg	<5000	<2000	<2000
Lead	MG/KG	13.4U	20.1	322
Manganese	MG/KG	1090	55800	1720
Manganese	MG/KG	16.6	221	348
Mercury	mg/Kg	.193	351	3.84
Methoxychlor	ug/g	<0.10	<0.005	<0.025
Methylene Chloride	ug/Kg	<10	<4	<4
Moisture	%	61.0	8.4	55.1
N-Butyl Alcohol	ug/Kg	<5000	<2000	<2000
Nickel	MG/KG	5.0U*	5.0U*	3030*
Nitrobenzene	mg/Kg	15U	0.9U	1U
Np-237	pCi/g	<0.4	<0.01	9.3
Oil & Grease	%	29.1	1.3	1.2
Paint Filter Test		FAIL	PASS	PASS
Particle Size		COMMENT	COMPLETE	COMPLETE
Pentachlorophenol	mg/Kg	60U	3.6U	4U
Potassium	MG/KG	244U	602N	244UN
Pu-238	pCi/g	<0.01	<0.01	<0.01
Pu-239/240	pCi/g	<0.01	<0.01	2.1
Pyridine	mg/Kg	15U	0.9U	1U
Selenium	mg/Kg	1.0U	1.5	1.0UN
Silver	mg/Kg	2.70N	8.90N	2.0UN
Sodium	MG/KG	4620	150N	73200
Specific Gravity	g/cm3	1.140	3.783	2.480
Sulfide	mg/kg	<500	<50.0	<50.0
Sulfur	mg/Kg	.2660	.0210	.1146
Total PCB's	ug/g			
	ug/g	33.6	3.22	2.38
Technical Sum-99 (Total)	pCi/g	174	0.5	19789

Technical Chlordane	ug/g	<0.50	<0.02	<0.10
Tetrachloroethene	ug/Kg	<10	<4	<4
	mg/Kg	1.0U	1.0U	1.0UN
	ug/Kg	19	<4	23
T PCB's	ug/kg	<1.3	<0.4	<0.4
Toxaphene	ug/g	<2.50	<0.10	<0.50
Trichloroethene	ug/Kg	36J	<4	<4
Trichlorofluoromethane	ug/Kg	<20	<8	<8
U-234	pCi/g	2525	0.40	3474
U-235	pCi/g	103	<0.02	91.2
U-236	pCi/g	19.7	<0.005	3.02
U-238	pCi/g	2314	0.34	160
Uranium	ug/gm	7000	1.03	523.7
Uranium-235, Wt%	% U-235	0.69	NA	8.12
Vanadium	MG/KG	1.7U	13.1	10.1
Vinyl Chloride	ug/Kg	<20	<8	<8
Xylene (total)	ug/Kg	10J	<4	<4
Zinc	MG/KG	14.9N	38.7	267
gamma-BHC (Lindane)	ug/g	<0.10	<0.005	<0.025
pH	pH units	8.32	8.26	4.59

Analysis	Units	940207-034 PORTAW1988	940207-035 PORTAW1988	940208-017 PORTAW2821
1,1,1-Trichloroethane	ug/Kg	<4	<4	<4
1,1,2,2-Tetrachloroethane	ug/Kg	<4	<4	<4
1,1,2-Trichloroethane	ug/Kg	<4	<4	<4
1,2-Dichloroethene	ug/Kg	<4	<4	<4
1,2-Dichlorobenzene	mg/Kg	1U	1U	1.3U
1,1-Dichloroethane	ug/Kg	<4	<4	<4
1,2-Dichloroethenes (cis & t)	ug/Kg	<4	<4	<4
1,4-Dichlorobenzene	mg/Kg	1U	1U	1.3U
2,4,5-TP (Silvex)	ug/g	0.05U	0.05U	0.05U
2,4,5-Trichlorophenol	mg/Kg	1U	1U	1.3U
2,4,6-Trichlorophenol	mg/Kg	1U	1U	1.3U
2,4-D	ug/g	0.05U	0.05U	0.05U
2,4-Dinitrotoluene	mg/Kg	4U	4U	5U
2-Butanone	ug/Kg	<200	<200	<200
2-Ethoxyethanol	mg/Kg	1U	1U	1.3U
2-Nitropropane	ug/Kg	<100	<100	<100
4-Methyl-2-pentanone	ug/Kg	<40	<40	<40
Acetone	ug/Kg	<200	<200	<200
Aluminum	MG/KG	421	139	20200*
Antimony	MG/KG	23.5UN	23.2UN	22.6UN
Aroclor-1242	ug/g			NR
Aroclor-1248	ug/g			NR
Aroclor-1254	ug/g			NR
Aroclor-1260	ug/g			NR
Aroclor-1268	ug/g			NR
Arsenic	mg/Kg	2.5N	1.5N	2.6
Ash	%	95.61	96.74	16.8
BTU	Btu/lb	272	186	<50
P	MG/KG	16.3	6.9	12.8
	ug/Kg	<4	<4	<4
Lead	MG/KG	0.79U	0.78U	0.76U

Cadmium	MG/KG	18.2	5.2	227*
Calcium	MG/KG	1230	618	1140*
Carbon disulfide	ug/Kg	<4	<4	<4
Carbon tetrachloride	ug/Kg	<4	<4	<4
Chloride	mg/kg	103	112	830
Chlorobenzene	ug/Kg	<4	<4	<4
Chloroethane	ug/Kg	<8	<8	<8
Chloroform	ug/Kg	<4	<4	<4
Chloromethane	ug/Kg	<8	<8	<8
Chromium	MG/KG	25.5	11.7	323*
Cobalt	MG/KG	4.6	4.7	6.9N*
Copper	MG/KG	1060	523	298*
Cresols	mg/Kg	1U	1U	1.3U
Cyanide	mg/kg	<1.0UJ	<1.0UJ	5.16J
Cyclohexanone	ug/Kg	<1000	<1000	<1000
Dichlorodifluoromethane	ug/Kg	<4	<4	<4
Endrin	ug/g	<0.025	<0.050	<0.005
Endrin aldehyde	ug/g	<0.025	<0.050	<0.005
Ethyl Acetate	ug/Kg	<40	<40	<40
Ethyl benzene	ug/Kg	<4	<4	<4
Ethyl ether	ug/Kg	<10	<10	<10
Flash Point	Deg F			
Fluoride	mg/kg	477	154	9100
Freon 113	ug/Kg	<4	<4	<4
Freon 114	ug/Kg	<4	<4	<4
Gross Alpha	pCi/g	1182	1918	7631
Gross Beta	pCi/g	7908	11970	11342
Hydroquinone	ug/g	<0.025	<0.050	<0.005
Isobutyl epoxide	ug/g	<0.025	<0.050	<0.005
Hexachlorobenzene	mg/Kg	1U	1U	1.3U
Hexachlorobutadiene	mg/Kg	1U	1U	1.3U
Hexachloroethane	mg/Kg	1U	1U	1.3U
Iron	MG/KG	8030	3750	13600*
Isobutyl alcohol	ug/Kg	<2000	<2000	<2000
Lead	MG/KG	470	364	122
Magnesium	MG/KG	376	200	942*
Manganese	MG/KG	72.5	58.4	152*
Mercury	mg/Kg	.156	.072	9.95
Methoxychlor	ug/g	<0.025	<0.050	<0.005
Methylene Chloride	ug/Kg	<4	<4	6
Moisture	%	0.3	0.1	71.9
N-Butyl Alcohol	ug/Kg	<2000	<2000	<2000
Nickel	MG/KG	1080*	744*	5180*
Nitrobenzene	mg/Kg	1U	1U	1.3U
Np-237	pCi/g	2.0	5.0	93.0
Oil & Grease	%	1.4	0.8	0.6
Paint Filter Test		PASS	PASS	PASS
Particle Size		COMPLETE	COMPLETE	COMPLETE
Pentachlorophenol	mg/Kg	4U	4U	5U
Potassium	MG/KG	249U	246U	239UN*
Pu-238	pCi/g	<0.01	0.18	5.2
Pu-239/240	pCi/g	0.47	0.19	11.0
Pyrene	mg/Kg	1U	1U	1.3U
Styrene	mg/Kg	1.7N	1.0UN	1.3
Silver	mg/Kg	53.3N	34.5N	2.0UN

Sodium	MG/KG	2120	1600	42800*
Specific Gravity	g/cm3	2.720	2.414	2.645
	mg/kg	<50.0	<50.0	<50.0
	mg/Kg	.2327	.2077	SNQ
T PCB'S	ug/g			<0.4
TOX	ug/g	18.7	6.73	3.19
Technetium-99 (Total)	pCi/g	14212	16184	11059
Technical Chlordane	ug/g	<0.10	<0.20	<0.02
Tetrachloroethene	ug/Kg	<4	<4	<4
Thallium	mg/Kg	1.0U	1.0U	1.0U
Toluene	ug/Kg	<4	<4	5
Total PCB's	ug/kg	<0.4	<0.4	
Toxaphene	ug/g	<0.50	<1.00	<0.10
Trichloroethene	ug/Kg	<4	<4	<4
Trichlorofluoromethane	ug/Kg	<8	<8	<8
U-234	pCi/g	1508	1408	1057
U-235	pCi/g	62	52.9	25.6
U-236	pCi/g	2.48	3.81	1.95
U-238	pCi/g	176	130	33
Uranium	ug/gm	557.9	415.4	111.2
Uranium-235, Wt%	% U-235	5.18	5.94	10.7
Vanadium	MG/KG	1.8U	1.8U	5.0
Vinyl Chloride	ug/Kg	<8	<8	<8
Xylene (total)	ug/Kg	<4	<4	<4
Zinc	MG/KG	168N	57.2N	309
gamma-BHC (Lindane)	ug/g	<0.025	<0.050	<0.005
pH	pH units	8.13	7.63	8.45

Analysis	Units	940208-021 PORTAW1879	940208-022 PORTAW1576	940209-056 PORTAW3075
=====	=====	=====	=====	=====
1,1,1-Trichloroethane	ug/Kg	<2	<20	
1,1,2,2-Tetrachloroethane	ug/Kg	<2	<20	
1,1,2-Trichloroethane	ug/Kg	<2	<20	
1,1-Dichloroethene	ug/Kg	<2	<20	
1,2-Dichlorobenzene	mg/Kg	1.2U	1U	
1,2-Dichloroethane	ug/Kg	<2	<20	
1,2-Dichloroethenes (cis & t)	ug/Kg	<2	<20	
1,4-Dichlorobenzene	mg/Kg	1.2U	1U	
2,4,5-TP (Silvex)	ug/g	0.30U	0.05U	
2,4,5-Trichlorophenol	mg/Kg	1.2U	1U	
2,4,6-Trichlorophenol	mg/Kg	1.2U	1U	
2,4-D	ug/g	0.30U	0.05U	
2,4-Dinitrotoluene	mg/Kg	5U	4U	
2-Butanone	ug/Kg	<100	<1000	
2-Ethoxyethanol	mg/Kg	1.2U	1U	
2-Nitropropane	ug/Kg	<50	<500	
4-Methyl-2-pentanone	ug/Kg	<20	<200	
Acetone	ug/Kg	<100	<1000	
Aluminum	MG/KG	11400*	113000*	1.8U
Antimony	MG/KG	23.0UN	45.1UN	4.5U
Aroclor-1242	ug/g	NR	NR	
Aroclor-1248	ug/g	NR	NR	
254	ug/g	3.3	NR	
1260	ug/g	2.7	NR	

Aroclor-1268	ug/g	0.8	NR	
Arsenic	mg/Kg	7.4	26.8	NA
B	%	20.1	59.8	
B	Btu/lb	<50	X	
Barium	MG/KG	74.2	132	0.15U
Benzene	ug/Kg	<2	<20	
Beryllium	MG/KG	0.78U	1.5U	0.15U
Cadmium	MG/KG	15.1*	33.4*	0.55U
Calcium	MG/KG	28700*	16800*	11.9
Carbon Disulfide	ug/Kg	<2	<20	
Carbon Tetrachloride	ug/Kg	<2	<20	
Chloride	mg/kg	152	2820	
Chlorobenzene	ug/Kg	<2	<20	
Chloroethane	ug/Kg	<4	<40	
Chloroform	ug/Kg	<2	<20	
Chloromethane	ug/Kg	<4	<40	
Chromium	MG/KG	154*	894*	0.49U
Cobalt	MG/KG	2.7U*	87.7N*	0.53U
Copper	MG/KG	423*	9340*	8.9
Cresols	mg/Kg	1.2U	1U	
Cyanide	mg/kg	<1.0UJ	<1.0	
Cyclohexanone	ug/Kg	<500	<5000	
Dichlorodifluoromethane	ug/Kg	<2	<20	
Endrin	ug/g	<0.100	<0.250	
Endrin aldehyde	ug/g	<0.100	<0.250	
Ethyl Acetate	ug/Kg	<20	<200	
Ethyl benzene	ug/Kg	<2	<20	
F	ug/Kg	<5	<50	
F	Deg F	>145	NR	
Fluoride	mg/kg	683	1150	
Freon 113	ug/Kg	<2	<20	
Freon 114	ug/Kg	<2	<20	
Gross Alpha	pCi/g	2746	23579	<2.0
Gross Beta	pCi/g	19115	5704	<1.1
Heptachlor	ug/g	<0.100	<0.250	
Heptachlor epoxide	ug/g	<0.100	<0.250	
Hexachlorobenzene	mg/Kg	1.2U	1U	
Hexachlorobutadiene	mg/Kg	1.2U	1U	
Hexachloroethane	mg/Kg	1.2U	1U	
Iron	MG/KG	17200*	523000*	13.2
Isobutyl alcohol	ug/Kg	<1000	<10000	
Lead	MG/KG	132	468	5.3
Magnesium	MG/KG	3330*	8980*	6.6
Manganese	MG/KG	143N*	4680*	0.15U
Mercury	mg/Kg	10.5	.057	NA
Methoxychlor	ug/g	<0.100	<0.250	
Methylene Chloride	ug/Kg	<2	<20	
Moisture	%	75.4	10.1	
N-Butyl Alcohol	ug/Kg	<1000	<10000	
Nickel	MG/KG	1350*	4350*	0.96U
Nitrobenzene	mg/Kg	1.2U	1U	
Np-237	pCi/g	7.7	<0.4	
Oil & Grease	%	<0.5	2.2	
er Test		FAIL	PASS	
Particle Size		COMPLETE	NA	

Pentachlorophenol	mg/Kg	5U	4U	
Potassium	MG/KG	590N*	954N*	47.4U
18	pCi/g	1.01	0.019	
	pCi/g	3.4	0.030	
ne	mg/Kg	1.2U	1U	
Selenium	mg/Kg	1.0U	1.0U	NA
Silver	mg/Kg	2.0UN	15.4N	NA
Sodium	MG/KG	531*	958*	15.5UN
Specific Gravity	g/cm3	2.447	6.244	
Sulfide	mg/kg	68.0	<50.0	
Sulfur	mg/Kg	SNQ	614.0	
TOTAL PCB'S	ug/g	6.8	<2.0	
TOX	ug/g	19.5	34.1	
Technetium-99 (Total)	pCi/g	16630	126.6	<3.1R
Technical Chlordane	ug/g	<0.40	<1.00	
Tetrachloroethene	ug/Kg	<2	<20	
Thallium	mg/Kg	1.0U	1.0U	NA
Toluene	ug/Kg	<2	24	
Total PCB's	ug/kg			
Toxaphene	ug/g	<2.00	<5.00	
Trichloroethene	ug/Kg	<2	<20	
Trichlorofluoromethane	ug/Kg	<4	<40	
U-234	pCi/g	2038	914	0.44
U-235	pCi/g	129	39.5	<0.013
U-236	pCi/g	NA	1.26	<0.01
U-238	pCi/g	417	40.6	<0.03
Uranium	ug/gm	1313	140.5	<0.001
U-235, Wt%	% U-235	4.58	13.1	NA
	MG/KG	9.3	25.7	0.34U
Chloride	ug/Kg	<4	<40	
Xylene (total)	ug/Kg	<2	89	
Zinc	MG/KG	432	1550	5.7
gamma-BHC (Lindane)	ug/g	<0.100	<0.250	
pH	pH units	8.42	7.45	COMMENT

Analysis	Units	940209-057 PORTAW4040	940209-058 PORTAW4040	940209-059 PORTAW4040
1,1,1-Trichloroethane	ug/Kg			
1,1,2,2-Tetrachloroethane	ug/Kg			
1,1,2-Trichloroethane	ug/Kg			
1,1-Dichloroethene	ug/Kg			
1,2-Dichlorobenzene	mg/Kg			
1,2-Dichloroethane	ug/Kg			
1,2-Dichloroethenes (cis & t)	ug/Kg			
1,4-Dichlorobenzene	mg/Kg			
2,4,5-TP (Silvex)	ug/g			
2,4,5-Trichlorophenol	mg/Kg			
2,4,6-Trichlorophenol	mg/Kg			
2,4-D	ug/g			
2,4-Dinitrotoluene	mg/Kg			
2-Butanone	ug/Kg			
2-Propanethanol	mg/Kg			
opane	ug/Kg			
-2-pentanone	ug/Kg			

Acetone	ug/Kg			
Aluminum	MG/KG	1.8U	1.7U	1.8U
Ammonia	MG/KG	6.3	4.5	4.5U
Anticlock	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-1260	ug/g			
Aroclor-1268	ug/g			
Arsenic	mg/Kg	NA	NA	NA
Ash	%			
BTU	Btu/lb			
Barium	MG/KG	0.15U	0.14U	0.15U
Benzene	ug/Kg			
Beryllium	MG/KG	0.15U	0.14U	0.15U
Cadmium	MG/KG	0.56U	0.52U	0.55U
Calcium	MG/KG	15.5	14.1	5.6
Carbon Disulfide	ug/Kg			
Carbon Tetrachloride	ug/Kg			
Chloride	mg/kg			
Chlorobenzene	ug/Kg			
Chloroethane	ug/Kg			
Chloroform	ug/Kg			
Chloromethane	ug/Kg			
Chromium	MG/KG	0.50U	0.46U	0.49U
Cobalt	MG/KG	0.54U	0.50U	0.53U
Copper	MG/KG	0.75U	0.70U	0.74U
Cresols	mg/Kg			
Cresol	mg/kg			
Cumyl Chloride	ug/Kg			
Dichlorodifluoromethane	ug/Kg			
Endrin	ug/g			
Endrin aldehyde	ug/g			
Ethyl Acetate	ug/Kg			
Ethyl benzene	ug/Kg			
Ethyl ether	ug/Kg			
Flash Point	Deg F			
Fluoride	mg/kg			
Freon 113	ug/Kg			
Freon 114	ug/Kg			
Gross Alpha	pCi/g	<1.1	<1.0	2
Gross Beta	pCi/g	<3.1	<1.8	<2.5
Heptachlor	ug/g			
Heptachlor epoxide	ug/g			
Hexachlorobenzene	mg/Kg			
Hexachlorobutadiene	mg/Kg			
Hexachloroethane	mg/Kg			
Iron	MG/KG	11.5	10.4	14.0
Isobutyl alcohol	ug/Kg			
Lead	MG/KG	2.7U	2.5U	2.6U
Magnesium	MG/KG	5.9	4.3	4.5U
Manganese	MG/KG	0.15U	0.14U	0.15U
Mercury	mg/Kg	NA	NA	NA
Methylene Chloride	ug/g			
Methylene Chloride	ug/Kg			
Moisture	%			

N-Butyl Alcohol	ug/Kg			
Nickel	MG/KG	0.98U	0.91U	0.96U
pb	mg/Kg			
	pCi/g			
Oil Grease	%			
Paint Filter Test				
Particle Size				
Pentachlorophenol	mg/Kg			
Potassium	MG/KG	48.3U	44.8U	47.4U
Pu-238	pCi/g			
Pu-239/240	pCi/g			
Pyridine	mg/Kg			
Selenium	mg/Kg	NA	NA	NA
Silver	mg/Kg	NA	NA	NA
Sodium	MG/KG	39.4N	21.3N	21.1N
Specific Gravity	g/cm3			
Sulfide	mg/kg			
Sulfur	mg/Kg			
TOTAL PCB'S	ug/g			
TOX	ug/g			
Technetium-99 (Total)	pCi/g	<1.3R	<0.7R	<1.1R
Technical Chlordane	ug/g			
Tetrachloroethene	ug/Kg			
Thallium	mg/Kg	NA	NA	NA
Toluene	ug/Kg			
Total PCB's	ug/kg			
Toxaphene	ug/g			
1,1,1-Trichloroethane	ug/Kg			
1,1,2-Trichloroethane	ug/Kg			
1,1,2,2-Tetrachloroethane	pCi/g	2.15	0.92	1.12
U-235	pCi/g	0.075	0.021	0.04
U-236	pCi/g	<0.01	<0.006	<0.009
U-238	pCi/g	0.053	<0.015	0.023
Uranium	ug/gm	0.19	0.01	<0.1
Uranium-235, Wt%	% U-235	17.89	NA	NA
Vanadium	MG/KG	0.35U	0.32U	0.34U
Vinyl Chloride	ug/Kg			
Xylene (total)	ug/Kg			
Zinc	MG/KG	1.6U	1.5U	1.6U
gamma-BHC (Lindane)	ug/g			
pH	pH units	COMMENT	COMMENT	COMMENT

Analysis	Units	940210-018 PORTAW1010	940210-019 PORTAW9131	940210-020 PORTAW1171
1,1,1-Trichloroethane	ug/Kg			
1,1,2,2-Tetrachloroethane	ug/Kg			
1,1,2-Trichloroethane	ug/Kg			
1,1-Dichloroethene	ug/Kg			
1,2-Dichlorobenzene	mg/Kg			
1,2-Dichloroethane	ug/Kg			
1,2-Dichloroethenes (cis & t)	ug/Kg			
1,4-Dichlorobenzene	mg/Kg			
Silvex)	ug/g			
2,4-Dichlorophenol	mg/Kg			

2,4,6-Trichlorophenol	mg/Kg			
2,4-D	ug/g			
D: toluene	mg/Kg			
2-Pentanol	ug/Kg			
2-Ethoxyethanol	mg/Kg			
2-Nitropropane	ug/Kg			
4-Methyl-2-pentanone	ug/Kg			
Acetone	ug/Kg			
Aluminum	MG/KG	1.8U	1.8U	1.8U
Antimony	MG/KG	4.4U	4.8	6.2
Aroclor-1242	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-1260	ug/g			
Aroclor-1268	ug/g			
Arsenic	mg/Kg	NA	NA	NA
Ash	%			
BTU	Btu/lb			
Barium	MG/KG	0.15U	0.15U	0.15U
Benzene	ug/Kg			
Beryllium	MG/KG	0.15U	0.15U	0.15U
Cadmium	MG/KG	0.54U	0.55U	0.55U
Calcium	MG/KG	4.3	7.1	3.7
Carbon Disulfide	ug/Kg			
Carbon Tetrachloride	ug/Kg			
Chloride	mg/kg			
Chlorobenzene	ug/Kg			
Chloroethane	ug/Kg			
Chloroform	ug/Kg			
Chloromethane	ug/Kg			
Chromium	MG/KG	0.48U	0.49U	0.49U
Cobalt	MG/KG	0.52U	0.53U	0.53U
Copper	MG/KG	0.72U	0.74U	0.74U
Cresols	mg/Kg			
Cyanide	mg/kg			
Cyclohexanone	ug/Kg			
Dichlorodifluoromethane	ug/Kg			
Endrin	ug/g			
Endrin aldehyde	ug/g			
Ethyl Acetate	ug/Kg			
Ethyl benzene	ug/Kg			
Ethyl ether	ug/Kg			
Flash Point	Deg F			
Fluoride	mg/kg			
Freon 113	ug/Kg			
Freon 114	ug/Kg			
Gross Alpha	pCi/g	1	<1.3	<0.5
Gross Beta	pCi/g	<2.3	<2.2	<1.5
Heptachlor	ug/g			
Heptachlor epoxide	ug/g			
Hexachlorobenzene	mg/Kg			
Hexachlorobutadiene	mg/Kg			
Hexachloroethane	mg/Kg			
	MG/KG	15.6	13.5	21.0
Isobutyl alcohol	ug/Kg			

Lead	MG/KG	2.6U	2.6U	2.6U
Magnesium	MG/KG	6.4	8.2	5.1
Mercury	MG/KG	0.15U	0.15U	0.15U
Methylchloride	mg/Kg	NA	NA	NA
Methylene Chloride	ug/g			
Moisture	%			
N-Butyl Alcohol	ug/Kg			
Nickel	MG/KG	0.94U	0.96U	0.96U
Nitrobenzene	mg/Kg			
Np-237	pCi/g			
Oil & Grease	%			
Paint Filter Test				
Particle Size				
Pentachlorophenol	mg/Kg			
Potassium	MG/KG	46.5U	47.4U	47.4U
Pu-238	pCi/g			
Pu-239/240	pCi/g			
Pyridine	mg/Kg			
Selenium	mg/Kg	NA	NA	NA
Silver	mg/Kg	NA	NA	NA
Sodium	MG/KG	15.8N	22.3N	15.5UN
Specific Gravity	g/cm3			
Sulfide	mg/kg			
Sulfur	mg/Kg			
TOTAL PCB'S	ug/g			
TOX	ug/g			
Trichloroethene (Total)	pCi/g	<1.0	<0.9R	<0.6R
Trichloroethene	ug/g			
Trichloroethene	ug/Kg			
Thallium	mg/Kg	NA	NA	NA
Toluene	ug/Kg			
Total PCB's	ug/kg			
Toxaphene	ug/g			
Trichloroethene	ug/Kg			
Trichlorofluoromethane	ug/Kg			
U-234	pCi/g	1.16	1.03	0.57
U-235	pCi/g	0.05	0.027	0.028
U-236	pCi/g	<0.008	<0.008	<0.01
U-238	pCi/g	<0.03	<0.01	0.034
Uranium	ug/gm	<0.1	<0.1	0.11
Uranium-235, Wt%	% U-235	NA	NA	NA
Vanadium	MG/KG	0.33U	0.34U	0.34U
Vinyl Chloride	ug/Kg			
Xylene (total)	ug/Kg			
Zinc	MG/KG	1.6U	1.6U	1.6U
gamma-BHC (Lindane)	ug/g			
pH	pH units	COMMENT	COMMENT	COMMENT

Analysis	Units	940210-021 PORTAW8510	940210-022 PORTAW1011	940210-023 PORTAW1835
1,1,1-trichloroethane	ug/Kg			
1,1,2-trichloroethane	ug/Kg			
1,2-dichloroethane	ug/Kg			

1,1-Dichloroethene	ug/Kg			
1,2-Dichlorobenzene	mg/Kg			
Diethane	ug/Kg			
1,2-Dichloroethenes (cis & t)	ug/Kg			
1,4-Dichlorobenzene	mg/Kg			
2,4,5-TP (Silvex)	ug/g			
2,4,5-Trichlorophenol	mg/Kg			
2,4,6-Trichlorophenol	mg/Kg			
2,4-D	ug/g			
2,4-Dinitrotoluene	mg/Kg			
2-Butanone	ug/Kg			
2-Ethoxyethanol	mg/Kg			
2-Nitropropane	ug/Kg			
4-Methyl-2-pentanone	ug/Kg			
Acetone	ug/Kg			
Aluminum	MG/KG	68.5	1.7U	1.7U
Antimony	MG/KG	44.7U	4.3U	4.9
Aroclor-1242	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-1260	ug/g			
Aroclor-1268	ug/g			
Arsenic	mg/Kg	NA	NA	NA
Ash	%			
BTU	Btu/lb			
Barium	MG/KG	12.6	0.15U	0.14U
Benzene	ug/Kg			
Boron	MG/KG	1.5U	0.15U	0.14U
Carbon	MG/KG	32.8	0.53U	0.52U
Calcium	MG/KG	254	10.1	7.6
Carbon Disulfide	ug/Kg			
Carbon Tetrachloride	ug/Kg			
Chloride	mg/kg			
Chlorobenzene	ug/Kg			
Chloroethane	ug/Kg			
Chloroform	ug/Kg			
Chloromethane	ug/Kg			
Chromium	MG/KG	13.2	0.47U	0.46U
Cobalt	MG/KG	35.7	0.51U	0.50U
Copper	MG/KG	21.9	1.8	0.70U
Cresols	mg/Kg			
Cyanide	mg/kg			
Cyclohexanone	ug/Kg			
Dichlorodifluoromethane	ug/Kg			
Endrin	ug/g			
Endrin aldehyde	ug/g			
Ethyl Acetate	ug/Kg			
Ethyl benzene	ug/Kg			
Ethyl ether	ug/Kg			
Flash Point	Deg F			
Fluoride	mg/kg			
Freon 113	ug/Kg			
Freon 114	ug/Kg			
Lead	pCi/g	2	<2	2
Gross Leachate	pCi/g	<2.6	<6	<4

Heptachlor	ug/g			
Heptachlor epoxide	ug/g			
Benzene	mg/Kg			
Cyclohexadiene	mg/Kg			
Heptachloroethane	mg/Kg			
Iron	MG/KG	365000	28.8	12.0
Isobutyl alcohol	ug/Kg			
Lead	MG/KG	71.6	2.5U	2.5U
Magnesium	MG/KG	146	9.1	8.4
Manganese	MG/KG	1190	0.15U	0.14U
Mercury	mg/Kg	NA	NA	NA
Methoxychlor	ug/g			
Methylene Chloride	ug/Kg			
Moisture	%			
N-Butyl Alcohol	ug/Kg			
Nickel	MG/KG	24.3	0.93U	0.91U
Nitrobenzene	mg/Kg			
Np-237	pCi/g			
Oil & Grease	%			
Paint Filter Test				
Particle Size				
Pentachlorophenol	mg/Kg			
Potassium	MG/KG	492	45.6U	44.8U
Pu-238	pCi/g			
Pu-239/240	pCi/g			
Pyridine	mg/Kg			
Selenium	mg/Kg	NA	NA	NA
Silver	mg/Kg	NA	NA	NA
	MG/KG	155UN	21.9N	31.2N
Specific Gravity	g/cm3			
Sulfide	mg/kg			
Sulfur	mg/Kg			
TOTAL PCB'S	ug/g			
TOX	ug/g			
Technetium-99 (Total)	pCi/g	<1.1R	<2.6R	<1.7R
Technical Chlordane	ug/g			
Tetrachloroethene	ug/Kg			
Thallium	mg/Kg	NA	NA	NA
Toluene	ug/Kg			
Total PCB's	ug/kg			
Toxaphene	ug/g			
Trichloroethene	ug/Kg			
Trichlorofluoromethane	ug/Kg			
U-234	pCi/g	1.58	2.67	2.75
U-235	pCi/g	0.086	0.09	0.12
U-236	pCi/g	<0.01	<0.06	<0.01
U-238	pCi/g	0.12	<0.02	0.05
Uranium	ug/gm	0.39	<0.1	0.22
Uranium-235, Wt%	% U-235	NA	NA	NA
Vanadium	MG/KG	6.0	0.33U	0.32U
Vinyl Chloride	ug/Kg			
Xylene (total)	ug/Kg			
Zinc	MG/KG	64.9	5.3	1.5U
Lindane)	ug/g			
	pH units	COMMENT	COMMENT	COMMENT

Analysis	Units	940214-061 PORTAW2730	940214-062 PORTAW2730	940214-063 PORTAW2730
1,1,1-Trichloroethane	ug/Kg	<20	42	<20
1,1,2,2-Tetrachloroethane	ug/Kg	<20	<20	<20
1,1,2-Trichloroethane	ug/Kg	<20	<20	<20
1,1-Dichloroethene	ug/Kg	65	39	<20
1,2-Dichlorobenzene	mg/Kg	1U	1U	1U
1,2-Dichloroethane	ug/Kg	400	108	<20
1,2-Dichloroethenes (cis & t)	ug/Kg	3000E	726	<20
1,4-Dichlorobenzene	mg/Kg	1U	1U	1U
2,4,5-TP (Silvex)	ug/g	5.05UJ	0.10UJ	0.005UJ
2,4,5-Trichlorophenol	mg/Kg	1U	1U	1U
2,4,6-Trichlorophenol	mg/Kg	1U	1U	1U
2,4-D	ug/g	0.05UJ	0.10UJ	0.005UJ
2,4-Dinitrotoluene	mg/Kg	4U	4U	4U
2-Butanone	ug/Kg	<1000	<1000	<1000
2-Ethoxyethanol	mg/Kg	50UJ	100UJ	1U
2-Nitropropane	ug/Kg	<500	<500	<500
4-Methyl-2-pentanone	ug/Kg	<200	<200	<200
Acetone	ug/Kg	<1000	<1000	<1000
Aluminum	MG/KG	3170	1510	2320
Antimony	MG/KG	3.4N	18.2N	11.5UN
Aroclor-1242	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-160	ug/g			
Aroclor-180	ug/g			
Arsenic	mg/Kg	1.00W	1.00W	4.6W
Ash	%	36.83	51.09	46.75
BTU	Btu/lb	3028	1139	816
Barium	MG/KG	93.5N	42.4N	90.7N
Benzene	ug/Kg	<20	<20	<20
Beryllium	MG/KG	0.44	0.39U	0.39U
Cadmium	MG/KG	0.28U	1.4U	1.4U
Calcium	MG/KG	13300	98500	55900
Carbon Disulfide	ug/Kg	<20	<20	<20
Carbon Tetrachloride	ug/Kg	<20	<20	<20
Chloride	mg/kg	2250	5920	39.0
Chlorobenzene	ug/Kg	<20	<20	<20
Chloroethane	ug/Kg	<40	<40	<40
Chloroform	ug/Kg	<20	<20	<20
Chloromethane	ug/Kg	<40	<40	<40
Chromium	MG/KG	3.9	2.9	3.5
Cobalt	MG/KG	3.9	3.0	2.3
Copper	MG/KG	5.4	9.2	6.1
Cresols	mg/Kg	1U	1U	1U
Cyanide	mg/kg	<1.00UJ	1.20J	<1.00UJ
Cyclohexanone	ug/Kg	<5000	<5000	<5000
Dichlorodifluoromethane	ug/Kg	<20	<20	<20
Endrin	ug/g	<0.050 J	<0.250 J	<0.005 J
Formaldehyde	ug/g	<0.050 J	<0.250 J	<0.005 J
Heptachlor	ug/Kg	<200	<200	<200
Ethylbenzene	ug/Kg	<20	<20	<20

Ethyl ether	ug/Kg	<50	<50	<50
Flash Point	Deg F			
r:	mg/kg	334	231	53.4
	ug/Kg	<20	<20	<20
F 114	ug/Kg	<20	<20	<20
Gross Alpha	pCi/g	85	183	<6
Gross Beta	pCi/g	2853	5246	<13
Heptachlor	ug/g	<0.050 J	<0.250 J	<0.005 J
Heptachlor epoxide	ug/g	<0.050 J	<0.250 J	<0.005 J
Hexachlorobenzene	mg/Kg	1U	1U	1U
Hexachlorobutadiene	mg/Kg	1U	1U	1U
Hexachloroethane	mg/Kg	1U	1U	1U
Iron	MG/KG	1880	1270	1090
Isobutyl alcohol	ug/Kg	<10000	<10000	<10000
Lead	MG/KG	5.5	6.7U	8.5
Magnesium	MG/KG	1720	3120	2100
Manganese	MG/KG	31.1	13.0	29.2
Mercury	mg/Kg	.05U	.05UN	.05U
Methoxychlor	ug/g	<0.050 J	<0.250 J	<0.005 J
Methylene Chloride	ug/Kg	27	<20	<20
Moisture	%	42.8	41.9	45.6
N-Butyl Alcohol	ug/Kg	<10000	<10000	<10000
Nickel	MG/KG	44.0	3.2	34.3
Nitrobenzene	mg/Kg	1U	1U	1U
Np-237	pCi/g	<0.40	<0.40	<0.40
Oil & Grease	%	<0.5	<0.5	<0.5
Paint Filter Test		PASS	PASS	PASS
size		COMPLETE	COMPLETE	COMPLETE
phenol	mg/Kg	4U	4U	4U
sium	MG/KG	249	173	275
Pu-238	pCi/g	0.13	<0.01	<0.01
Pu-239/240	pCi/g	0.058	<0.01	<0.01
Pyridine	mg/Kg	2.5	1U	1U
Selenium	mg/Kg	1.0UW	1.0UW	1.0UW
Silver	mg/Kg	2.0UN	2.0UN	2.0UN
Sodium	MG/KG	350	169	280
Specific Gravity	g/cm3	1.983	1.987	2.246
Sulfide	mg/kg	<50.0	<50.0	<50.0
Sulfur	mg/Kg	.1565	.0819	.1171
TOTAL PCB'S	ug/g			
TOX	ug/g	1790.	1160.	168.
Technetium-99 (Total)	pCi/g	290	448	<0.2
Technical Chlordane	ug/g	<0.20 J	<1.00 J	<0.02 J
Tetrachloroethene	ug/Kg	<20	<20	<20
Thallium	mg/Kg	1.0U	1.0U	1.0U
Toluene	ug/Kg	<20	<20	<20
Total PCB's	ug/kg	< 0.3 J	< 0.3 J	< 0.3
Toxaphene	ug/g	<1.00 J	<5.00 J	<0.10 J
Trichloroethene	ug/Kg	7870E	8600E	66
Trichlorofluoromethane	ug/Kg	<40	<40	<40
U-234	pCi/g	105	126	0.76
U-235	pCi/g	4.18	4.81	0.032
U-238	pCi/g	0.27	0.30	<0.003
	pCi/g	13.7	14.4	0.25
	ug/gm	43.1	45.5	0.77

Uranium-235, Wt%	% U-235	4.52	4.93	1.95
Vanadium	MG/KG	4.8	8.9	3.3
1 side	ug/Kg	252	<40	<40
lambda, ena al)	ug/Kg	<20	<20	<20
Zinc	MG/KG	7.4	4.1U	7.7
gamma-BHC (Lindane)	ug/g	<0.050 J	<0.250 J	<0.005 J
pH	pH units	8.40	8.18	8.77

Analysis	Units	940214-067 PORTAW2730	940214-068 PORTAW2730	940214-069 PORTAW2730
=====	=====	=====	=====	=====
1,1,1-Trichloroethane	ug/Kg	<20	<20	<20
1,1,2,2-Tetrachloroethane	ug/Kg	<20	<20	<20
1,1,2-Trichloroethane	ug/Kg	<20	<20	<20
1,1-Dichloroethene	ug/Kg	<20	<20	<20
1,2-Dichlorobenzene	mg/Kg	1U	1U	1U
1,2-Dichloroethane	ug/Kg	<20	<20	<20
1,2-Dichloroethenes (cis & t)	ug/Kg	<20	<20	250J
1,4-Dichlorobenzene	mg/Kg	1U	1U	1U
2,4,5-TP (Silvex)	ug/g	0.05UJ	0.005U	0.005UJ
2,4,5-Trichlorophenol	mg/Kg	1U	1U	1U
2,4,6-Trichlorophenol	mg/Kg	1U	1U	1U
2,4-D	ug/g	0.05UJ	0.005U	0.005UJ
2,4-Dinitrotoluene	mg/Kg	4U	4U	4U
2-Butanone	ug/Kg	<1000	<1000	<1000
2-Ethoxyethanol	mg/Kg	1U	1U	1U
2-Nitropropane	ug/Kg	<500	<500	<500
t 2-pentanone	ug/Kg	<200	<200	<200
2,4-D	ug/Kg	<1000	<1000	<1000
Aluminum	MG/KG	2630	1610	1340
Antimony	MG/KG	2.3UN	10.9U	11.4UN
Aroclor-1242	ug/g			
Aroclor-1248	ug/g			
Aroclor-1254	ug/g			
Aroclor-1260	ug/g			
Aroclor-1268	ug/g			
Arsenic	mg/Kg	1.0UW	1.0UW	1.0UW
Ash	%	10.66	63.39	47.85
BTU	Btu/lb	4913	351	162
Barium	MG/KG	123N	32.1	29.3N
Benzene	ug/Kg	<20	<20	<20
Beryllium	MG/KG	0.17	0.37U	0.38U
Cadmium	MG/KG	0.28U	1.3U	1.4U
Calcium	MG/KG	8240	7.8UN	159000
Carbon Disulfide	ug/Kg	35	<20	<20
Carbon Tetrachloride	ug/Kg	<20	<20	<20
Chloride	mg/kg	98.5	501	433
Chlorobenzene	ug/Kg	<20	<20	<20
Chloroethane	ug/Kg	<40	<40	<40
Chloroform	ug/Kg	<20	<20	<20
Chloromethane	ug/Kg	<40	<40	<40
Chromium	MG/KG	3.1	1.8	2.9
C 1)	MG/KG	1.6	1.8N	1.4
	MG/KG	2.6	2.8	3.4
Cresol	mg/Kg	1U	1U	1U

Cyanide	mg/kg	<1.0	<1.0UJ	<1.0UJ
Cyclohexanone	ug/Kg	<5000	<5000	<5000
1,1-dichloroethane	ug/Kg	<20	<20	<20
	ug/g	<0.005 J	<0.005 J	<0.005 J
Ethyl aldehyde	ug/g	<0.005 J	<0.005 J	<0.005 J
Ethyl Acetate	ug/Kg	<200	<200	<200
Ethyl benzene	ug/Kg	<20	<20	<20
Ethyl ether	ug/Kg	<50	<50	<50
Flash Point	Deg F			
Fluoride	mg/kg	191	98.7	84.7
Freon 113	ug/Kg	<20	<20	<20
Freon 114	ug/Kg	<20	<20	<20
Gross Alpha	pCi/g	64	<18	20
Gross Beta	pCi/g	79	<21	74
Heptachlor	ug/g	<0.005 J	<0.005 J	<0.005 J
Heptachlor epoxide	ug/g	<0.005 J	<0.005 J	<0.005 J
Hexachlorobenzene	mg/Kg	1U	1U	1U
Hexachlorobutadiene	mg/Kg	1U	1U	1U
Hexachloroethane	mg/Kg	1U	1U	1U
Iron	MG/KG	1160	756	742
Isobutyl alcohol	ug/Kg	<10000	<10000	<10000
Lead	MG/KG	4.9	9.6	6.8
Magnesium	MG/KG	1380	7240	4040
Manganese	MG/KG	99.6	16.2	17.4
Mercury	mg/Kg	.05U	.05U	.05U
Methoxychlor	ug/g	<0.005 J	<0.005 J	<0.005 J
Methylene Chloride	ug/Kg	<20	<20	<20
1,1,1-trichloroethanol	%	45.9	29.2	55.6
	ug/Kg	<10000	<10000	<10000
	MG/KG	36.2	2.3U	2.5U
Nitrobenzene	mg/Kg	1U	1U	1U
Np-237	pCi/g	<0.40	<0.40	<0.40
Oil & Grease	%	<0.5	<0.5	<0.5
Paint Filter Test		PASS	PASS	PASS
Particle Size		COMPLETE	COMPLETE	COMPLETE
Pentachlorophenol	mg/Kg	4U	4U	4U
Potassium	MG/KG	346	459	327
Pu-238	pCi/g	<0.01	<0.01	<0.01
Pu-239/240	pCi/g	<0.01	<0.01	<0.01
Pyridine	mg/Kg	1U	1U	1U
Selenium	mg/Kg	1.0UW	1.0UW	1.0UW
Silver	mg/Kg	2.0UN	4.98N	2.62N
Sodium	MG/KG	416	85.9N	102
Specific Gravity	g/cm3	1.939	2.230	2.262
Sulfide	mg/kg	<50.0	<50.0	<50.0
Sulfur	mg/Kg	.2660	.0128	.0281
TOTAL PCB'S	ug/g			
TOX	ug/g	131.	65.8	98.1
Technetium-99 (Total)	pCi/g	0.4	<1.1	2.1
Technical Chlordane	ug/g	<0.02 J	<0.02 J	<0.02 J
Tetrachloroethene	ug/Kg	<20	<20	<20
Thallium	mg/Kg	1.0U	1.0U	1.0U
Thimerosal	ug/Kg	<20	<20	<20
1,1,1-trichloroethane	ug/kg	< 0.3 J	< 0.3	< 0.3
1,1,2-trichloroethane	ug/g	<0.10 J	<0.10 J	<0.10 J

Trichloroethene	ug/Kg	<20	<20	4000J
Trichlorofluoromethane	ug/Kg	<40	<40	<40
4	pCi/g	73.8	0.13	20.3
U-235	pCi/g	3.33	<0.02	0.88
U-236	pCi/g	0.27	<0.015	0.10
U-238	pCi/g	9.8	0.13	2.38
Uranium	ug/gm	31.0	0.40	7.56
Uranium-235, Wt%	% U-235	5.01	NA	5.42
Vanadium	MG/KG	3.0	3.7	2.9
Vinyl Chloride	ug/Kg	<40	<40	<40
Xylene (total)	ug/Kg	<20	<20	<20
Zinc	MG/KG	7.6	5.7	8.5
gamma-BHC (Lindane)	ug/g	<0.005 J	<0.005 J	<0.005 J
pH	pH units	6.73	12.52	12.40

Analysis	Units	940214-070 PORTAW2730	940214-071 PORTAW2730
1,1,1-Trichloroethane	ug/Kg	<20	295
1,1,2,2-Tetrachloroethane	ug/Kg	<20	<20
1,1,2-Trichloroethane	ug/Kg	<20	<20
1,1-Dichloroethene	ug/Kg	<20	747
1,2-Dichlorobenzene	mg/Kg	1U	1U
1,2-Dichloroethane	ug/Kg	<20	561
1,2-Dichloroethenes (cis & t)	ug/Kg	<20	12000E
1,4-Dichlorobenzene	mg/Kg	1U	1U
2,4,5-TP (Silvex)	ug/g	0.005UJ	0.05UJ
2,4,6-Trichlorophenol	mg/Kg	1U	1U
2,4,5-Trichlorophenol	mg/Kg	1U	1U
2,4-D	ug/g	0.005UJ	0.05UJ
2,4-Dinitrotoluene	mg/Kg	4U	4U
2-Butanone	ug/Kg	<1000	<1000
2-Ethoxyethanol	mg/Kg	1U	100UJ
2-Nitropropane	ug/Kg	<500	<500
4-Methyl-2-pentanone	ug/Kg	<200	<200
Acetone	ug/Kg	<1000	<1000
Aluminum	MG/KG	1640	2690
Antimony	MG/KG	11.6UN	2.3UN
Aroclor-1242	ug/g		
Aroclor-1248	ug/g		
Aroclor-1254	ug/g		
Aroclor-1260	ug/g		
Aroclor-1268	ug/g		
Arsenic	mg/Kg	1.0UW	1.0UW
Ash	%	41.35	11.11
BTU	Btu/lb	176	6651
Barium	MG/KG	46.6N	120N
Benzene	ug/Kg	<20	<20
Beryllium	MG/KG	0.39U	0.19
Cadmium	MG/KG	1.4U	0.29U
Calcium	MG/KG	118000	5850
Carbon Disulfide	ug/Kg	<20	<20
Carbon Tetrachloride	ug/Kg	<20	<20
	mg/kg	594	18,300
Chlorobenzene	ug/Kg	<20	<20

Chloroethane	ug/Kg	<40	<40
Chloroform	ug/Kg	<20	<20
Chlorobenzene	ug/Kg	<40	<40
	MG/KG	3.1	2.8
C	MG/KG	2.6	0.92
Copper	MG/KG	7.1	2.4
Cresols	mg/Kg	1U	1U
Cyanide	mg/kg	<1.0UJ	<1.0UJ
Cyclohexanone	ug/Kg	<5000	<5000
Dichlorodifluoromethane	ug/Kg	<20	<20
Endrin	ug/g	<0.005 J	<0.100 J
Endrin aldehyde	ug/g	<0.005 J	<0.100 J
Ethyl Acetate	ug/Kg	<200	<200
Ethyl benzene	ug/Kg	<20	<20
Ethyl ether	ug/Kg	<50	<50
Flash Point	Deg F		
Fluoride	mg/kg	68.1	168
Freon 113	ug/Kg	<20	113
Freon 114	ug/Kg	<20	<20
Gross Alpha	pCi/g	57	<4
Gross Beta	pCi/g	153	52
Heptachlor	ug/g	<0.005 J	<0.100 J
Heptachlor epoxide	ug/g	<0.005 J	<0.100 J
Hexachlorobenzene	mg/Kg	1U	1U
Hexachlorobutadiene	mg/Kg	1U	1U
Hexachloroethane	mg/Kg	1U	1U
Iron	MG/KG	1200	1220
N-Butyl Alcohol	ug/Kg	<10000	<10000
	MG/KG	6.8U	5.1
	MG/KG	3460	1270
Manganese	MG/KG	29.7	34.2
Mercury	mg/Kg	.05U	.05U
Methoxychlor	ug/g	<0.005 J	<0.100 J
Methylene Chloride	ug/Kg	<20	28
Moisture	%	55.3	40.6
N-Butyl Alcohol	ug/Kg	<10000	<10000
Nickel	MG/KG	8.2	2.6
Nitrobenzene	mg/Kg	1U	1U
Np-237	pCi/g	<0.40	<0.40
Oil & Grease	%	<0.5	<0.5
Paint Filter Test		PASS	PASS
Particle Size		COMPLETE	COMPLETE
Pentachlorophenol	mg/Kg	4U	4U
Potassium	MG/KG	634	105
Pu-238	pCi/g	<0.01	<0.01
Pu-239/240	pCi/g	<0.01	<0.01
Pyridine	mg/Kg	1U	2.3
Selenium	mg/Kg	1.0UW	1.0UW
Silver	mg/Kg	2.0N	2.0UN
Sodium	MG/KG	187	248
Specific Gravity	g/cm3	2.211	1.971
Sulfide	mg/kg	<50.0	<50.0
Sulfur	mg/Kg	0.0358	.3118
	ug/g		
	ug/g	298.	5190.

Technetium-99 (Total)	pCi/g	3.0	<0.2
Technical Chlordane	ug/g	<0.02 J	<0.40 J
ac' ethene	ug/Kg	<20	<20
Amili	mg/Kg	1.0U	1.0U
Toluene	ug/Kg	<20	<20
Total PCB's	ug/kg	< 0.3	< 0.3 J
Toxaphene	ug/g	<0.10 J	<2.00 J
Trichloroethene	ug/Kg	50	20000E
Trichlorofluoromethane	ug/Kg	<40	<40
U-234	pCi/g	53.8	2.08
U-235	pCi/g	2.05	0.067
U-236	pCi/g	0.16	<0.007
U-238	pCi/g	6.17	0.30
Uranium	ug/gm	19.5	0.94
Uranium-235, Wt%	% U-235	4.90	3.34
Vanadium	MG/KG	3.8	3.4
Vinyl Chloride	ug/Kg	<40	1560
Xylene (total)	ug/Kg	<20	<20
Zinc	MG/KG	21.9	5.5
gamma-BHC (Lindane)	ug/g	<0.005 J	<0.100 J
pH	pH units	12.41	8.65

Waste Stream Number: SW-21

Waste Stream Title: Contaminated Water From Non-ER Projects

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

C m ENV./WASTE MGT. Matl. Description:
F per: ECSS Subproject Number: EVSR

Analysis	Units	940617-025 EVSR94067	940714-077 EVSR94071	940719-029 EVSR94072
1,1,1-Trichloroethane	ug/L			
1,1,2,2-Tetrachloroethane	ug/L			
1,1,2-Trichloroethane	ug/L			
1,1-Dichloroethane	ug/L			
1,1-Dichloroethene	ug/L			
1,2-Dichloroethane	ug/L			
1,2-Dichloroethenes (cis & t)	ug/L			
2-Butanone	ug/L			
4-Methyl-2-pentanone	ug/L			
Acetone	ug/L			
Aluminum	ug/L		52.2*	
Americium 241	pCi/L		<0.14	<0.08
Ammonia-Nitrogen (Water)	mg/L			0.1
Ammonia-Nitrogen (Water)	mg/L			
Antimony	ug/L		174*	
Aroclor-1242	ug/L		NR	NR
Aroclor-1248	ug/L		NR	NR
Aroclor-1254	ug/L		NR	NR
Aroclor-1260	ug/L		<1.0	<1.0J
Aroclor-1268	ug/L		NR	NR
Arsenic	ug/L		107UJ	
Arsenic	ug/L			
Bacteria, E. Coli	col/100ml			2040B
Bacteria, F. Coli	col/100ml			2920B
Barium	ug/L		90.2	
Barium	ug/L			
Benzene	ug/L			
Beryllium	ug/L		1.8U	
Bromomethane	ug/L		NA	
Bromomethane	ug/L			
CBOD	mg/L			<5
Cadmium	UG/L			4.1U
Cadmium	ug/L		9.2U	
Calcium	ug/L		222000	
Carbon Disulfide	ug/L			
Carbon Tetrachloride	ug/L			
Chlorobenzene	ug/L			
Chloroethane	ug/L			
Chloroform	ug/L		45	
Chloromethane	ug/L			
Chromium	UG/L		9.8	
Chromium	ug/L		43.6	
Chromium, Hexa., Dissolved	mg/L		<.01	

Chromium, Hexavalent	mg/L			<.01
Cobalt	ug/L		5.2U	
Copper	UG/L		40.6	3.5
Copper	ug/L		36.0	
1,1,1-Trichloroethane	ug/L			
Leak Seals (Total)	ug/L			
Dissolved Solids (Water)	mg/L		2878	
Ethyl benzene	ug/L			
Freon 113	ug/L			
Freon 114	ug/L			
Gross Alpha Activity	pCi/L	<5	<14	2163
Gross Beta Activity	pCi/L	<9	23	975
Iron	UG/L		384NJ	103NJ
Iron	ug/L		346J*	
Lead	ug/L		39.8U	
Lead	ug/L			
Magnesium	ug/L		216000	
Manganese	ug/L		6.2*	
Mercury	ug/L		1U	1U
Methylene Chloride	ug/L			
Neptunium 237	pCi/L		<0.08	<0.13
Nickel	UG/L			21.6
Nickel	ug/L		20.5U	
Nitrate-Nitrogen	mg/L			18
Oil and Grease (Water)	mg/L		<5.0	<5.0
Oil and Grease (Water)	mg/L			
PCB (TOTAL)	ug/L			
Phosphorous (Total)	mg/L		4.9	1.1
Plutonium 238	pCi/L		<0.08	<0.11
Plutonium 239+240	pCi/L		<0.08	<0.04
Selenium	ug/L			
Selenium	ug/L		132U	
Silver	ug/L			
Silver	ug/L		4.5U	
Sodium	ug/L		243000	
Suspended Solids (Total)	mg/L		26.8	2.4
TOTAL PCB'S	ug/L		<1.0	<1.0J
Technetium	pCi/L	<24	<22	1178
1,2-Dichloroethene	ug/L			
Thallium	ug/L		365*	
Tin	ug/L		NA	
Titanium	ug/L		NA	
Toluene	ug/L			
Trichloroethene	ug/L		18	
Trichlorofluoromethane	ug/L			
Turbidity	NTU			1.6
Uranium	UG/L		2.1	190
Uranium	mg/L	.005		
Uranium Daughter Beta		NA	NA	
Vanadium	ug/L		7.3	
Vinyl Chloride	ug/L			
Xylene (total)	ug/L			
Zinc	UG/L		71.8J	57.3NJ
Zinc	ug/L		86.7*	

Analysis	Units	940804-055 EVSR94081	941006-081 EVSR94104	941021-061 EVSR94105
1,1,1-Trichloroethane	ug/L	2 U	<2	<2
1,1,2-Trichloroethane	ug/L	2 U	<2	<2
1,2-Dichloroethane	ug/L	2 U	<2	<2
1,1,1-Trichloroethane	ug/L	2 U	<2	5
1,1-Dichloroethene	ug/L	2 U	<2	8
1,2-Dichloroethane	ug/L	2 U	<2	<2
1,2-Dichloroethenes (cis & t)	ug/L	2 U	<2	<2
2-Butanone	ug/L	100 U	<100	<100
4-Methyl-2-pentanone	ug/L	100 U	<100	<100
Acetone	ug/L	100 U	<100	<100
Aluminum	ug/L			
Americium 241	pCi/L			
Ammonia-Nitrogen (Water)	mg/L			
Ammonia-Nitrogen (Water)	mg/L	1.7	1.3	
Antimony	ug/L			
Aroclor-1242	ug/L			
Aroclor-1248	ug/L			
Aroclor-1254	ug/L			
Aroclor-1260	ug/L			
Aroclor-1268	ug/L			
Arsenic	ug/L			
Arsenic	ug/L			47.1UN
Bacteria, E. Coli	col/100ml			
Bacteria, F. Coli	col/100ml			
Barium	ug/L			
Barium	ug/L			68.8
Benzene	ug/L	2 U	<2	<2
Beryllium	ug/L			
Bismuth	ug/L			
Bromodichloromethane	ug/L	2 U	<2	<2
Bromoform	ug/L	2 U	<2	<2
Bromomethane	ug/L	4 U	<4	<4
CBOD	mg/L			
Cadmium	UG/L			4.1U
Cadmium	ug/L			
Cadmium	ug/L			
Cadmium	ug/L	2 U	<2	<2
Calcium	ug/L	2 U	<2	<2
Chlorobenzene	ug/L	2 U	<2	<2
Chloroethane	ug/L	4 U	<4	<4
Chloroform	ug/L	2 U	<2	<2
Chloromethane	ug/L	4 U	<4	<4
Chromium	UG/L	4330	125	3.0
Chromium	ug/L			
Chromium, Hexa., Dissolved	mg/L			
Chromium, Hexavalent	mg/L	<.02	<0.01	
Cobalt	ug/L			
Copper	UG/L	1260N	213	
Copper	ug/L			
Dibromochloromethane	ug/L	2 U	<2	<2
Dichlorobenzenes (Total)	ug/L	2 U	<2	<2
Dissolved Solids (Water)	mg/L			

Ethyl benzene	ug/L	2 U	<2	<2
Freon 113	ug/L	2 U	<2	3J
Freon 114	ug/L	4 U	<4	<4
Gross Alpha Activity	pCi/L	<18	<4	11
Gross Beta Activity	pCi/L	<38	<9	23
Iron	UG/L	54400	1930	
Lead	ug/L			
Lead	ug/L	387	29.3	17.5U
Magnesium	ug/L			
Manganese	ug/L			
Mercury	ug/L	1U	1U	1U
Methylene Chloride	ug/L	2 U	<2	<2
Neptunium 237	pCi/L			
Nickel	UG/L	127J	113	
Nickel	ug/L			
Nitrate-Nitrogen	mg/L	<0.20	<0.20	
Oil and Grease (Water)	mg/L		<5.0	
Oil and Grease (Water)	mg/L	11.8		
PCB (TOTAL)	ug/L			
Phosphorous (Total)	mg/L			
Plutonium 238	pCi/L			
Plutonium 239+240	pCi/L			
Selenium	ug/L			58.UN
Selenium	ug/L			
Silver	ug/L			2.0
Silver	ug/L			
Sodium	ug/L			
Suspended Solids (Total)	mg/L	63.5	24.4	
TOTAL PCB'S	ug/L			
Technetium	pCi/L	<22	<22	<22
Tetrachloroethene	ug/L	2 U	<2	<2
Thallium	ug/L			
Tin	ug/L			
Titanium	ug/L			
Toluene	ug/L	2 U	<2	<2
Trichloroethene	ug/L	2 U	<2	15
Trichlorofluoromethane	ug/L	4 U	<4	<4
Uranium	NTU			
Uranium	UG/L	4.9	1.0U	6.0
Uranium	mg/L			
Uranium Daughter Beta				
Vanadium	ug/L			
Vinyl Chloride	ug/L	1 U	<1	<1
Xylene (total)	ug/L	2 U	<2	<2
Zinc	UG/L	13800	2620	
Zinc	ug/L			

Analysis	Units	941102-017
		EVSR94107
-----	-----	-----
1,1,1-Trichloroethane	ug/L	
1,1,2,2-Tetrachloroethane	ug/L	
1,1,2-Trichloroethane	ug/L	
1,1-Dichloroethane	ug/L	

Waste Stream Number: SW-22

**Waste Stream Title: Sludges From Groundwater, Decontamination Water, Surface
Water, etc.**

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

RFD# 32031

ANALIS ID: 950424-020 Project: ER 9506A Customer Sample ID: ESL030
Customer: ENV RESTORATION Requisition Number: 014306
Date Sampled: 21-APR-1995 13:45 Date Sample Received: 21-APR-1995
Sampled By: TA SHERWOOD Date Sample Completed: 1-MAY-1995
Material Description: LIQUID X344A PIT

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW-846-9040	pH	6.10		ph units	CJ HOLBROOK	24-APR-1995	95100475
SW846-3005A	Sample Prep Metals	COMPLETE			ML STEWART	24-APR-1995	042495-052
SW846-6010A	Arsenic	1220		UG/L	TE SHOOK	24-APR-1995	95080364
	Barium	4340		UG/L	TE SHOOK	24-APR-1995	95080364
	Cadmium	32.2UN		UG/L	TE SHOOK	24-APR-1995	95080364
	Chromium	2020		UG/L	TE SHOOK	24-APR-1995	95080364
	Lead	902		UG/L	TE SHOOK	24-APR-1995	95080364
	Nickel	323000		UG/L	TE SHOOK	24-APR-1995	95080364
	Silver	21.1UN		UG/L	TE SHOOK	24-APR-1995	95080364
	Mercury	2.0U			EK GILBERT	25-APR-1995	95080362
53-330	Technetium	<22		pCi/L	SC BARKER	26-APR-1995	95070626
TSD553-700	% U-235	2.2	0.45 %		CD GOOD	25-APR-1995	95070619
	Uranium	0.15	0.023 ppm		CD GOOD	25-APR-1995	95070619

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 1-MAY-1995

***** COMMENT PAGE *****
***** 950424-020 *****

Definition Page for Qualifiers/Flags

950424-020

I Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

Correlation coefficient for MSA is less than 0.995.

The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

- P - Probable Identification.

ANALYSIS DATA REPORT

ANALIS ID: 950424-020
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#1
 Authorized By: J. J. Williams

Customer Sample ID: ESL030
 Customer: ENV RESTORATION
 Sample Matrix: WATER
 Requisition Number: 014306
 Date Sample Received: 21-APR-1995
 Date Sampled: 21-APR-1995

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 25-APR-1995
 QA File Number: 95160425A1
 Dilution Factor: 1000
 Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	100000U	100-41-4	Ethyl benzene	2000U
71-43-2	Benzene	2000U	76-13-1	Freon 113	8,100
75-27-4	Bromodichloromethane	2000U	76-14-2	Freon 114	4000JU
75-25-2	Bromoform	2000U	108-10-1	4-Methyl-2-pentanone	100000U
74-83-9	Bromomethane	4000U	75-09-2	Methylene Chloride	2000U
78-93-3	2-Butanone	100000U	79-34-5	1,1,2,2-Tetrachloroethane	2000U
75-15-0	Carbon Disulfide	2000U	127-18-4	Tetrachloroethene	2000U
56-23-5	Carbon Tetrachloride	2000U	108-88-3	Toluene	2000U
108-90-7	Chlorobenzene	2000U	71-55-6	1,1,1-Trichloroethane	2000U
75-00-3	Chloroethane	4000U	79-00-5	1,1,2-Trichloroethane	2000U
67-66-3	Chloroform	2000U	79-01-6	Trichloroethene	14,000
74-87-3	Chloromethane	4000U	75-69-4	Trichlorofluoromethane	4000U
124-48-1	Dibromochloromethane	2000U	75-01-4	Vinyl Chloride	1000U
106-46-7	1,4-Dichlorobenzene	2000U	1330-20-7	m,p-Xylene	2000U
95-50-1	1,2-Dichlorobenzene	2000U	95-47-6	o-Xylene	2000U
541-73-1	1,3-Dichlorobenzene	2000U			
75-34-3	1,1-Dichloroethane	2000U			
107-06-2	1,2-Dichloroethane	2000U			
75-35-4	1,1-Dichloroethene	2000U			
156-59-2	cis-1,2-Dichloroethene	2000U			
156-60-5	trans-1,2-Dichloroethene	2000U			

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

RFD #32031

AnalIS ID: 950424-021 Project: ER 9506A Customer Sample ID: ESL031
Customer: ENV RESTORATION Requisition Number: 014306
Date Sampled: 21-APR-1995 14:30 Date Sample Received: 21-APR-1995
Sampled By: TA SHERWOOD Date Sample Completed: 1-MAY-1995
Material Description: LIQUID X344A PIT

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW-846-9040	pH	6.15		ph units	CJ HOLBROOK	24-APR-1995	95100475
SW846-3005A	Sample Prep Metals	COMPLETE			ML STEWART	24-APR-1995	042495-052
SW846-6010A	Arsenic	1320		UG/L	TE SHOOK	24-APR-1995	95080364
	Barium	413		UG/L	TE SHOOK	24-APR-1995	95080364
	Cadmium	3.2UN		UG/L	TE SHOOK	24-APR-1995	95080364
	Chromium	422		UG/L	TE SHOOK	24-APR-1995	95080364
	Lead	171		UG/L	TE SHOOK	24-APR-1995	95080364
	Nickel	153000		UG/L	TE SHOOK	24-APR-1995	95080364
	Silver	2.1UN		UG/L	TE SHOOK	24-APR-1995	95080364
U	Mercury	5.2		ug/L	EK GILBERT	25-APR-1995	95080362
TSD553-330	Technetium	<22		pCi/L	SC BARKER	26-APR-1995	95070626
TSD553-700	% U-235	1.7	0.38	%	CD GOOD	25-APR-1995	95070619
	Uranium	1.1	0.15	ppm	CD GOOD	25-APR-1995	95070619

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 1-MAY-1995

***** COMMENT PAGE *****
***** 950424-021 *****

Definition Page for Qualifiers/Flags

950424-021

I Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

ANALIS ID: 950424-021
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#1
 Authorized By: J. J. Williams

Customer Sample ID: ESL031
 Customer: ENV RESTORATION
 Sample Matrix: WATER
 Requisition Number: 014306
 Date Sample Received: 21-APR-1995
 Date Sampled: 21-APR-1995

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 25-APR-1995
 QA File Number: 95160425A1
 Dilution Factor: 2000
 Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	200000U	100-41-4	Ethyl benzene	4000U
71-43-2	Benzene	4000U	76-13-1	Freon 113	59,000
75-27-4	Bromodichloromethane	4000U	76-14-2	Freon 114	8000JU
75-25-2	Bromoform	4000U	108-10-1	4-Methyl-2-pentanone	200000U
74-83-9	Bromomethane	8000U	75-09-2	Methylene Chloride	4000U
78-93-3	2-Butanone	200000U	79-34-5	1,1,2,2-Tetrachloroethane	4000U
75-15-0	Carbon Disulfide	4000U	127-18-4	Tetrachloroethene	4000U
56-23-5	Carbon Tetrachloride	4000U	108-88-3	Toluene	4000U
108-90-7	Chlorobenzene	4000U	71-55-6	1,1,1-Trichloroethane	4000U
75-00-3	Chloroethane	8000U	79-00-5	1,1,2-Trichloroethane	4000U
67-66-3	Chloroform	4000U	79-01-6	Trichloroethene	88,000
74-87-3	Chloromethane	8000U	75-69-4	Trichlorofluoromethane	8000U
124-48-1	Dibromochloromethane	4000U	75-01-4	Vinyl Chloride	2000U
106-46-7	1,4-Dichlorobenzene	4000U	1330-20-7	m,p-Xylene	4000U
95-50-1	1,2-Dichlorobenzene	4000U	95-47-6	o-Xylene	4000U
541-73-1	1,3-Dichlorobenzene	4000U			
75-34-3	1,1-Dichloroethane	4000U			
107-06-2	1,2-Dichloroethane	4000U			
75-35-4	1,1-Dichloroethene	4000U			
156-59-2	cis-1,2-Dichloroethene	4000U			
156-60-5	trans-1,2-Dichloroethene	4000U			

Waste Stream Number: SW-23

Waste Stream Title: Sludges From Oils or Other Organic Liquids

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920527-001 Project: WMG T RFD Customer Sample ID: RFD-888-7
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 27-MAY-1992 Date Sample Received: 27-MAY-1992
Sampled By: B KELLEY Date Sample Completed: 10-FEB-1993
Material Description: UNKNOWN

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ASTMD3828	Flash Point (Setaflash)	>140		Deg. F	DK SCAGGS	2-JUN-1992	X
SW846-7060	Arsenic	<250NJ		ug/L	TE SHOOK	30-AUG-1992	92080335
SW846-7470	Mercury	>80 NR		mg/kg	TE SHOOK	10-AUG-1992	92080280
SW846-7740	Selenium	250NJ		ug/L	TE SHOOK	30-AUG-1992	92080335
SW846-7760	Silver	201 *R		ug/L	TE SHOOK	21-AUG-1992	92080303
SW846-8080	PCB (TOTAL)	4.8		ug/mL	PA HUTCHINS	17-JUN-1992	92160119
	Barium	82.5NJ		MG/KG	EL SIMPSON	1-JUN-1992	92080352
	Cadmium	1.5		MG/KG	EL SIMPSON	1-JUN-1992	92080352
	Chromium	472		MG/KG	EL SIMPSON	1-JUN-1992	92080352
	Lead	151		MG/KG	EL SIMPSON	1-JUN-1992	92080352
TSD553-380	Technetium (Waste)	102.8		pCi/mL	JJ SISLER	3-SEP-1992	92070857
TSD553-440	Assay (% U-235, Waste)	18.23		% U-235	JD LITTERAL	29-MAY-1992	92070813
	Total Uranium	22.05		PPM U	JD LITTERAL	29-MAY-1992	92070813

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	50	46.4	92.80
BARIUM	10.07	-36.38	-361.27
CADMIUM	10.07	9.9	98.01
CHROMIUM	10.07	-42.88	-425.82
LEAD	10.07	16.72	166.04
SELENIUM	50	40.8	81.60
SILVER	1000	9.	0.90

***** Comments from the Oil & Coal Analysis Laboratory *****

This sample consisted of two distinct phases. The top layer was a clear liquid, bottom layer was a dark sediment. The sample was first analyzed after mixing, then each layer was analyzed separately. No flash point was observed for any analyses.

***** Comments from the Spectrochemistry/ICP Laboratory *****

For mercury analysis: the sample saturated the system with mercury and was reported as a greater than value. The mercury analysis holding time was also exceeded.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
Secondary dilution.
Exceeds initial calibration range.

/ Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
D. E. Boyd (Spectrochemistry/ICP Laboratory)
D. E. Boyd (Organic Analytical Services)
John E. Hobensack (Oil & Coal Analysis Laboratory)

Date Approved: 11-FEB-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920527-001
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-888-7
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 27-MAY-1992
Date Sampled: 27-MAY-1992

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 3-FEB-1993
QA File Number: 93160045
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/ml	CAS		ug/ml
56-23-5	Carbon Tetrachloride	.02U			
75-09-2	Methylene Chloride	.02U			
127-18-4	Tetrachloroethene	22J			
71-55-6	1,1,1-Trichloroethane	13J			
79-01-6	Trichloroethene	171J			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920527-001
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-888-7
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 27-MAY-1992
Date Sampled: 27-MAY-1992

Solvents_F003

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 3-FEB-1993
QA File Number: 93160045
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/ml	CAS		ug/ml
67-64-1	Acetone	20U			
	n-Butyl alcohol	20U			
108-94-1	Cyclohexanone	20U			
141-78-6	Ethyl Acetate	20U			
	Ethylbenzenes	20U			
60-29-7	Ethyl ether	20U			
67-56-1	Methanol	20			
	4-Methyl-2-pentanone (MIBK)	20U			
	Xylenes	60U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: ER-1

Waste Stream Title: Groundwater and Related Water

ER-1

Sample Id: VER47687001S
Project: X-04-WM BJC09824
Subproj Analyses: LIQUID
Customer: J A APPEGATE
COC#: 061531
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: LIQUID
Protocol: RCRA
Status: APPROVED
Location:

Sampled: 09/15/98 13:35:00
Received: 09/16/98 07:25:02
Needed: 10/21/98 23:59:00
Approved: 09/25/98 11:46:51

Analy Meth: SW846-9040B QC Batch: QC98265001 Test: PH Rpt Basis: none Date Approved
Prep Meth: Analyzed: 09/17/98 00:00:00 T L VININGS Approver: R E CHARLES 09/22/98 09:44

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
pH	6.83		pH units				1		

Analy Meth: SW846-8260A QC Batch: QC98266006 Test: VOA-1 Rpt Basis: none Date Approved
Prep Meth: Analyzed: 09/21/98 00:00:00 B D FUHR Approver: C J VANMETER 09/25/98 11:11

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	23		ug/L		C	20	10		
Trichloroethene	1000		ug/L		C	100	50		

Comments: This sample was initially analyzed on 09/18/98 with QA# 98160918A3 at a X10 dilution. However, because the trichloroethene concentration exceeded the initial calibration range, it was re-analyzed at a X50 dilution on 09/21/98 with QA# 98160921A1.

Footnotes:

C - Method SW846-5030A "Purge-and-Trap"

***** END OF REPORT *****

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

te Stream ER-1

ANALIS ID: 951027-108 Project: ER 9567D Requisition Number: 018843
 Customer Sample ID: VER31810007 Customer: ENV RERSTORATION
 Date Sampled: 27-OCT-1995 10:20 Date Sample Received: 27-OCT-1995
 Sampled By: R CAUDILL Date Sample Completed: 11-DEC-1995
 Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ACD-5101	Density	1.00		g/mL	ML STEWART	3-NOV-1995	95081159
SW846-1010	Flash Point	NR			D PEREZ	3-NOV-1995	NA
SW846-3015	Sample Prep Metals	COMPLETE			ML STEWART	3-NOV-1995	110395-011
SW846-3510	Sample Prep PCB	COMPLETE			SL EWING	1-NOV-1995	95160315
SW846-3520	Sample Prep Semi-Volatiles	COMPLETE			DG OPALINSKI	2-NOV-1995	95160322
SW846-6010A	Arsenic	70.0U		ug/L	RL POLK	3-NOV-1995	95081178
	Barium	219		ug/L	RL POLK	3-NOV-1995	95081178
	Cadmium	3.6U		ug/L	RL POLK	3-NOV-1995	95081178
	Chromium	44.8		ug/L	RL POLK	3-NOV-1995	95081178
	Lead	27.9UJ		ug/L	RL POLK	3-NOV-1995	95081178
	Selenium	94.4U		ug/L	RL POLK	3-NOV-1995	95081178
	Silver	2.4UN		ug/L	RL POLK	3-NOV-1995	95081178
SW846-7470	Mercury	10U		ug/L	RB COLLEY	6-NOV-1995	95081171
SW846-8080	PCB-1232	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	PCB-1242	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	PCB-1248	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	PCB-1254	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	PCB-1260	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	PCB-1268	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
	Total PCB	<1J		ug/mL	DH BLUE	9-NOV-1995	95161107M1
SW846-9010A	Total Cyanide	0.3U		mg/kg	SL LEMASTER	8-NOV-1995	95101592
SW846-9020A	TOX	85.9		ug/L	DE COLLINS	21-NOV-1995	95161121T2
SW846-9030A	Sulfide	20U		mg/kg	SL LEMASTER	9-NOV-1995	95101665
TS0553-230	Gross Alpha	47		pCi/L	JP BREWSTER	3-NOV-1995	95071649
	Gross Beta	47		pCi/L	JP BREWSTER	3-NOV-1995	95071649
i 1	Technetium	<24		pCi/L	JP BREWSTER	3-NOV-1995	950716
TS0553-440	Cesium-134	<0.1		pCi/g	WC ZUEFLE	15-NOV-1995	95071716

	Cesium-137	0.2	pCi/g	WC ZUEFLE	15-NOV-1995	95071716
	Cobalt-60	<0.2	pCi/g	WC ZUEFLE	15-NOV-1995	95071716
	Gross Gamma	0.2	pCi/g	WC ZUEFLE	15-NOV-1995	95071716
T	-700	% U-235	ND	%	CD GOOD	30-OCT-1995
		Alpha Activity	2	pCi/L	BW SHORT	30-OCT-1995
		Americium-241	<0.30	pCi/L	CD GOOD	30-OCT-1995
		Neptunium-237	<0.33	pCi/L	CD GOOD	30-OCT-1995
		Plutonium-238	<0.12	pCi/L	CD GOOD	30-OCT-1995
		Plutonium-239/240	<0.12	pCi/L	CD GOOD	30-OCT-1995
		Protactinium-234	<0.10	pCi/L	CD GOOD	30-OCT-1995
		Thorium-228	<1.6	pCi/L	CD GOOD	30-OCT-1995
		Thorium-230	<1.0	pCi/L	CD GOOD	30-OCT-1995
		Thorium-232	<1.0	pCi/L	CD GOOD	30-OCT-1995
		Thorium-234	0.52	0.37 pCi/L	CD GOOD	30-OCT-1995
		Uranium	1.6	1.1 ug/L	CD GOOD	30-OCT-1995

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	500	537.62	107.52
Barium	500	433.92	86.78
Cadmium	500	504.45	100.89
Chromium	500	469.25	93.85
Lead	500	554.71	110.94
	60	61.2	102.00
	500	549.12	109.82
	500	29.34	5.87
TOX	478	362.	75.75

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)

Date Approved: 14-DEC-1995

***** COMMENT PAGE *****
***** 951027-108 *****

*** Comments from the Spectrochemistry/ICP Laboratory ***

SW846-6010A Pb qualified as estimate due to lab control sample not meeting Q.C. limits.

SW846-1010 Flash Point not requested on the chain-of-custody.

***** Comments from the Organic Analytical Services *****

SW846-8260

Sample found to be unpreserved. (pH=7)

SW846-8080:

Sample VER31810007 required an additional 1:10 dilution which resulted in the surrogate being diluted out of the sample and the result being estimated.

SW846-9020A

The sample tested unpreserved (pH=7).

Breakthrough for the duplicate analysis was 15.3%; however, because of close agreement between results from both sets of analyses, the duplicate value was used to obtain a mean.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - duplicate analysis is not within control limits.
 - correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

Analysis ID: 951027-108
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: C. J. Van Meter

Customer Sample ID: VER31810007
Customer: ENV RERSTORATION
Sample Matrix: OIL
Requisition Number: 018843
Date Sample Received: 27-OCT-1995
Date Sampled: 27-OCT-1995

RCRA and TCLP Semi-Volatile Compounds

Date Extracted/Prepared: 2-NOV-1995
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-NOV-1995
QA File Number: 95161114AB01
Dilution Factor: 1.0
Analyst: BD FUHR

CAS		ug/L	CAS		ug/L
95-48-7	2-Methylphenol	232U			
108-39-4	m-Cresol	232U			
106-44-5	4-Methylphenol	232U			
87-86-5	Pentachlorophenol	464U			
95-95-4	2,4,5-Trichlorophenol	232U			
88-06-2	2,4,6-Trichlorophenol	232U			
	Total Cresol	NA			
106-46-7	1,4-Dichlorobenzene	232U			
121-14-2	2,4-Dinitrotoluene	464U			
118-74-1	Hexachlorobenzene	232U			
	Hexachloro-1,3-butadiene	232U			
67-72-1	Hexachloroethane	232U			
98-95-3	Nitrobenzene	232U			
110-86-1	Pyridine	232U			

ANALYSIS DATA REPORT

AnalIS ID: 951027-108
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#1
Authorized By: C. J. Van Meter

Customer Sample ID: VER31810007
Customer: ENV RERSTORATION
Sample Matrix: OIL
Requisition Number: 018843
Date Sample Received: 27-OCT-1995
Date Sampled: 27-OCT-1995

RCRA and TCLP Volatile Organic Compounds

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 6-NOV-1995
QA File Number: 95161106A1
Dilution Factor: 1.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
71-43-2	Benzene	2U			
56-23-5	Carbon Tetrachloride	2U			
108-90-7	Chlorobenzene	2U			
67-66-3	Chloroform	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	2U			
78-93-3	2-Butanone	100U			
127-18-4	Tetrachloroethene	2U			
79-01-6	Trichloroethene	2U			
75-01-4	Vinyl Chloride	1U			

Waste Stream Number: ER-2

Waste Stream Title: PPE and Miscellaneous Debris

VER47216001

Portsmouth Analytical Laboratory
Official Report

X982390030

mer Smpl Id: VER47216001

st:X-04-WM BJC09824

ubproj Analyses:SOLID

Customer:J A APPLGATE

COC#: 06113

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: SOLID

Protocol:RCRA

Status: APPROVED

Location:

Sampled: 08/27/98 09:50:00

Received: 08/27/98 12:28:29

Needed: 10/01/98 23:59:00

Approved: 10/01/98 13:26:30

Analy Meth:SW846-8260A

QC Batch:QC98247012 Test:VOA

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:09/03/98 00:00:00 J N STRICKLAND

Approver: C J VANMETER

09/09/98 10:12

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	41		ug/kg		C	20	10		
1,1,2,2-Tetrachloroethane	20		ug/kg	U	C	20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	20		ug/kg	U	C	20	10		
1,1,2-Trichloroethane	20		ug/kg	U	C	20	10		
1,1-Dichloroethane	20		ug/kg	U	C	20	10		
1,1-Dichloroethene	20		ug/kg	U	C	20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/kg	U	C	40	10		
1,2-Dichlorobenzene	20		ug/kg	U	C	20	10		
1,2-Dichloroethane	20		ug/kg	U	C	20	10		
1,2-Dimethylbenzene	20		ug/kg	U	C	20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/kg	U	C	20	10		
1,3-Dichlorobenzene	20		ug/kg	U	C	20	10		
1,4-Dichlorobenzene	20		ug/kg	U	C	20	10		
Pentanone	500		ug/kg	U	C	500	10		
2-Pentanol	500		ug/kg	U	C	500	10		
Acetone	500		ug/kg	U	C	500	10		
Benzene	20		ug/kg	U	C	20	10		
Bromodichloromethane	20		ug/kg	U	C	20	10		
Bromoform	20		ug/kg	U	C	20	10		
Bromomethane	40		ug/kg	U	C	40	10		
Carbon disulfide	20		ug/kg	U	C	20	10		
Carbon tetrachloride	20		ug/kg	U	C	20	10		
Chlorobenzene	20		ug/kg	U	C	20	10		
Chloroethane	40		ug/kg	U	C	40	10		
Chloroform	20		ug/kg	U	C	20	10		
Chloromethane	40		ug/kg	U	C	40	10		
Dibromochloromethane	20		ug/kg	U	C	20	10		
Ethylbenzene	20		ug/kg	U	C	20	10		
Methylene chloride	20		ug/kg	U	C	20	10		
Tetrachloroethene	20		ug/kg	U	C	20	10		
Toluene	20		ug/kg	U	C	20	10		
Trichloroethene	110		ug/kg		C	20	10		
Trichlorofluoromethane	40		ug/kg	U	C	40	10		
Vinyl chloride	10		ug/kg	U	C	10	10		
cis-1,2-Dichloroethene	20		ug/kg	U	C	20	10		
trans-1,2-Dichloroethene	20		ug/kg	U	C	20	10		

Comments: The LCS soil blank failed the established accuracy surrogate recovery for dibromofluoromethane (113% -- upper limit=112%).

Dibromofluoromethane (136% -- upper limit=112%) failed the established surrogate recovery in this sample.

EPA Qualifiers:

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth:PORTS-XP4-TS-RL7280	QC Batch:QC98274000 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:09/29/98 00:00:00 J P BREWSTER	Approver: B W SHORT	10/01/98 13:10

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	<6		pCi/g			6	
Beta activity	<16		pCi/g			16	

Analy Meth:PORTS-XP4-TS-RL7385	QC Batch:QC98274001 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:09/29/98 00:00:00 J P BREWSTER	Approver: B W SHORT	10/01/98 13:11

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	<0.6		pCi/g			0.6	

Analy Meth:PORTS-XP4-TS-RL7710ug	QC Batch:QC98273009 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:09/21/98 00:00:00 R J ANDRE	Approver: B W SHORT	09/30/98 14:45

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	2.8	0.37	ug/g				
ium-235	0.83	0.27	wt %				

Footnotes:

C - Method SW846-S030A "Purge-and-Trap"

ER-2

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

PPE & misc debris ER

ANALIS ID: 971113-134 Project: ER 9762E Customer Sample ID: VER42119001
 Customer: ENV RESTORATION Requisition Number: 058409
 Date Sampled: 13-NOV-1997 10:30 Date Sample Received: 13-NOV-1997
 Sampled By: R STANLY Date Sample Completed: 18-DEC-1997
 Material Description: LAB WASTE

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3540B	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	19-NOV-1997	97160309
TSD553-280	Gross Alpha	2		pCi/g	JJ SISLER	16-DEC-1997	97071724
	Gross Beta	20		pCi/g	JJ SISLER	16-DEC-1997	97071724
TSD553-385	Technetium	113.5		pCi/g	JP BREWSTER	16-DEC-1997	97071725
TSD553-710	% U-235	4.0	0.95	%	CD GOOD	18-NOV-1997	97071602
	Uranium	3.6	0.49	ug/g	CD GOOD	18-NOV-1997	97071602

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 C. J. Van Meter (Organic Analytical Services)
 Approved: 18-DEC-1997

* Comments from the Organic Analytical Services *****

Method SW846 8260A

Bromomethane did not pass the daily continuing calibration check and the value is estimated.

Due to the sample matrix, 2-bromo-1-chloropropane and 1,4-difluorobenzene-d4 failed the method area lower limit and the following target compounds quantitated from these internal standards are estimated: bromoform, chlorobenzene, dibromochloromethane, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, ethylbenzene, 1,1,2,2-tetrachloroethane, tetrachloroethene, m,p-xylene, toluene and o-xylene.

Toluene-d8 and bromofluorobenzene failed the sample surrogate recovery limits due to low recoveries but passed the recovery limits on the MS.

Trichloroethene exceeded the calibration range and the result could be much higher. This sample was spiked and trichloroethene failed the recovery limits due to the large amount present in the sample; therefore, the result is estimated.

The target compound, cis-1,2-dichloroethene also exceeded the calibration range and the result could be much higher; therefore, the result is estimated.

Mc 35408: Semi-volatile prep
A smaller sample aliquot was used for extraction due to the known matrix interference of glued materials. The final dilution was also higher due to the sample matrix.

SW846-8270B

Because of the high level of methylene chloride extractable organic compounds, a smaller than normal initial sample weight was used, and a larger than normal final extract concentration was necessary. These factors resulted in the higher limits of quantitation.

The %RSD for the initial calibration of 2,4-dinitrophenol (19.8%) was greater than the method criteria of 15%, therefore results for 2,4-dinitrophenol are estimated.

I Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

relation coefficient for MSA is less than 0.995.

one value is between the LC and the LLD.

entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

ANALIS ID: 971113-134
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890-3
 Authorized By: C. J. Van Meter

Customer Sample ID: VER42119001
 Customer: ENV RESTORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 058409
 Date Sample Received: 13-NOV-1997
 Date Sampled: 13-NOV-1997

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 20-NOV-1997
 QA File Number: 97161120A3
 Dilution Factor: 10
 Analyst: JN STRICKLAND

CAS	ug/Kg	CAS	ug/Kg
67-64-1 Acetone	500U	100-41-4 Ethyl benzene	20UJ
71-43-2 Benzene	20U	76-13-1 Freon 113	20U
75-27-4 Bromodichloromethane	20U	76-14-2 Freon 114	40U
75-25-2 Bromoform	20UJ	108-10-1 4-Methyl-2-pentanone	500U
74-83-9 Bromomethane	40UJ	75-09-2 Methylene Chloride	25
78-93-3 2-Butanone	500U	79-34-5 1,1,2,2-Tetrachloroethane	20UJ
75-15-0 Carbon Disulfide	100	127-18-4 Tetrachloroethene	380J
56-23-5 Carbon Tetrachloride	20U	108-88-3 Toluene	440J
108-90-7 Chlorobenzene	20UJ	71-55-6 1,1,1-Trichloroethane	25
75-00-3 Chloroethane	40U	79-00-5 1,1,2-Trichloroethane	20U
67-66-3 Chloroform	20U	79-01-6 Trichloroethene	5800EJ
74-87-3 Chloromethane	40U	75-69-4 Trichlorofluoromethane	40U
124-48-1 Dibromochloromethane	20UJ	75-01-4 Vinyl Chloride	10U
106-46-7 1,4-Dichlorobenzene	20UJ	1330-20-7 m,p-Xylene	20UJ
95-50-1 1,2-Dichlorobenzene	20UJ	95-47-6 o-Xylene	20UJ
541-73-1 1,3-Dichlorobenzene	20UJ		
75-34-3 1,1-Dichloroethane	20U		
107-06-2 1,2-Dichloroethane	20U		
75-35-4 1,1-Dichloroethene	31		
156-59-2 cis-1,2-Dichloroethene	9200EJ		
156-60-5 trans-1,2-Dichloroethene	59		

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department
*** See comment page for comments ***

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 971113-134
Laboratory: Organic Analytical Services
Sample Matrix: SOLID WASTE
Level: (low/med): LOW
Dilution Factor: 10

Customer Sample ID: VER42119001
Customer: ENV RESTORATION
File ID: _____
Date Received: 13-NOV-1997
Date Analyzed: 20-NOV-1997
Concentration Units: ug/Kg

Number TICs found: 4

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 110-54-3	Hexane	13.2	140	
2.	Unknown	19.4	400	J
3.	2-Butoxyethanol	22.9	2000	J
4.	Unknown	7.4	1000	J
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
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30.				

ANALYSIS DATA REPORT

** See comment page for comments. **

AnaLIS ID: 971113-134
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: SV1
 Authorized By: C. J. Van Meter

Customer Sample ID: VER42119001
 Customer: ENV RESTORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 058409
 Date Sample Received: 13-NOV-1997
 Date Sampled: 13-NOV-1997

Semi-Volatiles

Date Extracted/Prepared: 19-NOV-1997
 Analysis Procedure Number: SW846-82708
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 5-DEC-1997
 QA File Number: 97161205B01
 Dilution Factor: 1.0
 Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
59-50-7	4-Chloro-3-methylphenol	10000U	606-20-2	2,6-Dinitrotoluene	5000U
95-57-8	2-Chlorophenol	5000U	78-59-1	Isophorone	5000U
120-83-2	2,4-Dichlorophenol	5000U	98-95-3	Nitrobenzene	5000U
105-67-9	2,4-Dimethylphenol	5000U	83-32-9	Acenaphthene	5000U
51-28-5	2,4-Dinitrophenol	25000U	208-96-8	Acenaphthylene	5000U
534-52-1	4,6-Dinitro-2-methylphenol	25000U	120-12-7	Anthracene	5000U
88-75-5	2-Nitrophenol	5000U	56-55-3	Benzo(a)anthracene	5000U
100-02-7	4-Nitrophenol	25000U	50-32-8	Benzo(a)pyrene	5000U
87-86-5	Pentachlorophenol	25000U	191-24-2	Benzo(g,h,i)perylene	5000U
108-95-2	Phenol	5000U	76-01-7	Benzo(k)fluoranthene	5000U
88-06-2	2,4,6-Trichlorophenol	5000U	218-01-9	Chrysene	5000U
117-81-7	bis(2-Ethylhexyl)phthalate	15000	53-70-3	Dibenz(a,h)anthracene	5000U
85-68-7	Butylbenzylphthalate	5000U	206-44-0	Fluoranthene	5000U
84-74-2	Di-n-butylphthalate	5000U	86-73-7	Fluorene	5000U
84-66-2	Diethylphthalate	5000U	193-39-5	Indeno(1,2,3-cd)pyrene	5000U
131-11-3	Dimethylphthalate	5000U	91-20-3	Naphthalene	5000U
117-84-0	di-n-Octylphthalate	5000U	85-01-8	Phenanthrene	5000U
62-75-9	N-Nitrosodimethylamine	5000U	129-00-0	Pyrene	5000U
86-30-6	N-Nitrosodiphenylamine	5000U	111-44-4	bis(2-Chloroethyl)ether	5000U
621-64-7	N-Nitroso-di-n-propylamine	5000U	111-91-1	bis(2-Chloroethoxy)methane	5000U
121-14-2	2,4-Dinitrotoluene	5000U	39638-32-9	bis(2-Chloroisopropyl)ether	5000U

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 971113-134
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: C. J. Van Meter

Customer Sample ID: VER42119001
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 058409
Date Sample Received: 13-NOV-1997
Date Sampled: 13-NOV-1997

Semi-Volatiles

Date Extracted/Prepared: 19-NOV-1997
Analysis Procedure Number: SW846-82708
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-DEC-1997
QA File Number: 97161205B01
Dilution Factor: 1.0
Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
101-55-3	4-Bromophenyl-phenylether	5000U			
7005-72-3	4-Chlorophenyl-phenylether	5000U			
91-58-7	2-Chloronaphthalene	5000U			
95-50-1	1,2-Dichlorobenzene	5000U			
541-73-1	1,3-Dichlorobenzene	5000U			
106-46-7	1,4-Dichlorobenzene	5000U			
118-74-1	Hexachlorobenzene	5000U			
87-68-3	Hexachlorobutadiene	5000U			
77-47-4	Hexachlorocyclopentadiene	5000U			
67-72-1	Hexachloroethane	5000U			
120-82-1	1,2,4-Trichlorobenzene	5000U			
110-86-1	Pyridine	5000U			
	2-Methylphenol (o-Cresol)	5000U			
	3,4-Methylphenol (m,p-Cresol)	5000U			
95-95-4	2,4,5-Trichlorophenol	5000U			
103-33-3	Azobenzene	5000U			
205-99-2	Benzo(b)fluoranthene	5000U			

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 971112-002 Project: ER 9762A Customer Sample ID: VER44424001
Customer: ENV RESTORATION Requisition Number: 058415
Date Sampled: 6-NOV-1997 13:00 Date Sample Received: 7-NOV-1997
Sampled By: B PYLES Date Sample Completed: 15-DEC-1997
Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD553-280	Gross Alpha	<3		pCi/g	JP BREWSTER	14-DEC-1997	97071712
	Gross Beta	<10		pCi/g	JP BREWSTER	14-DEC-1997	97071712
TSD553-385	Technetium	<0.9		pCi/g	JP BREWSTER	14-DEC-1997	97071713
TSD553-710	% U-235	ND	ND	%U-235	CD GOOD	13-NOV-1997	97071587
	Uranium	0.18	0.096	ug/g	CD GOOD	13-NOV-1997	97071587

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
C. J. Van Meter (Organic Analytical Services)
Data Approved: 15-DEC-1997

***** COMMENT PAGE *****
***** 971112-002 *****

* Comments from the Organic Analytical Services *****

Me SW846 8260A

The internal standard, 1,4-difluorobenzene-d4 did not pass the method area lower limit criteria. Two compounds, 1,4-dichlorobenzene and 1,2-dichlorobenzene which are quantitated from this internal standard are estimated values.

Definition Page for Qualifiers/Flags

971112-002

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

ANALIS ID: 971112-002
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890-3
 Authorized By: C. J. Van Meter

Customer Sample ID: VER44424001
 Customer: ENV RESTORATION
 Sample Matrix: WATER
 Requisition Number: 058415
 Date Sample Received: 7-NOV-1997
 Date Sampled: 6-NOV-1997

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 13-NOV-1997
 QA File Number: 97161113A3
 Dilution Factor: 10
 Analyst: JN STRICKLAND

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	500U	100-41-4	Ethyl benzene	20U
71-43-2	Benzene	20U	76-13-1	Freon 113	20U
75-27-4	Bromodichloromethane	20U	76-14-2	Freon 114	40U
75-25-2	Bromoform	20U	108-10-1	4-Methyl-2-pentanone	500U
74-83-9	Bromomethane	40U	75-09-2	Methylene Chloride	20U
78-93-3	2-Butanone	500U	79-34-5	1,1,2,2-Tetrachloroethane	20U
75-15-0	Carbon Disulfide	20U	127-18-4	Tetrachloroethene	20U
56-23-5	Carbon Tetrachloride	20U	108-88-3	Toluene	20U
108-90-7	Chlorobenzene	20U	71-55-6	1,1,1-Trichloroethane	20U
75-00-3	Chloroethane	40U	79-00-5	1,1,2-Trichloroethane	20U
67-66-3	Chloroform	20U	79-01-6	Trichloroethene	20U
74-87-3	Chloromethane	40U	75-69-4	Trichlorofluoromethane	40U
124-48-1	Dibromochloromethane	20U	75-01-4	Vinyl Chloride	10U
106-46-7	1,4-Dichlorobenzene	20UJ	1330-20-7	m,p-Xylene	20U
95-50-1	1,2-Dichlorobenzene	20UJ	95-47-6	o-Xylene	20U
541-73-1	1,3-Dichlorobenzene	20U			
75-34-3	1,1-Dichloroethane	20U			
107-06-2	1,2-Dichloroethane	20U			
75-35-4	1,1-Dichloroethene	20U			
156-59-2	cis-1,2-Dichloroethene	20U			
156-60-5	trans-1,2-Dichloroethene	20U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department
*** See comment page for comments ***

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 971112-002

Laboratory: Organic Analytical Services

Sample Matrix: WATER

Level: (low/med): LOW

Dilution Factor: 10

Customer Sample ID: VER44424001

Customer: ENV RESTORATION

File ID: _____

Date Received: 7-NOV-1997

Date Analyzed: 13-NOV-1997

Concentration Units: ug/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 2213-23-2	2,4-Dimethylheptane	23.0	50	J
2.	Decane	23.9	60	J
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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30.				

Customer Smpl Id: VER46512001

F :X-04-WM BJC09824

Lab. of Analyses: SOLID

Customer: J A APPEGATE

COC#: 54121

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: SOLID

Protocol: RCRA

Status: APPROVED

Location:

Sampled: 05/14/98 14:15:00

Received: 05/15/98 07:47:16

Needed: 06/19/98 00:00:00

Approved: 06/19/98 14:52:54

Analy Meth: SW846-8260A

QC Batch: QC98141001 Test: VOA

Rpt Basis: none

Prep Meth:

Analyzed: 05/20/98 00:00:00 J N STRICKLAND

Approver: C J VANMETER

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	20		ug/kg	JU		20	10		
1,1,2,2-Tetrachloroethane	20		ug/kg	JU		20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	20		ug/kg	JU		20	10		
1,1,2-Trichloroethane	20		ug/kg	JU		20	10		
1,1-Dichloroethane	20		ug/kg	JU		20	10		
1,1-Dichloroethene	20		ug/kg	JU		20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/kg	JU		40	10		
1,2-Dichlorobenzene	20		ug/kg	JU		20	10		
1,2-Dichloroethane	20		ug/kg	JU		20	10		
1,2-Dimethylbenzene	20		ug/kg	JU		20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/kg	JU		20	10		
1,3-Dichlorobenzene	20		ug/kg	JU		20	10		
1,4-Dichlorobenzene	20		ug/kg	JU		20	10		
anone	500		ug/kg	JU		500	10		
ethyl-2-pentanone	500		ug/kg	JU		500	10		
Acetone	1900		ug/kg	J		500	10		
Benzene	20		ug/kg	JU		20	10		
Bromodichloromethane	20		ug/kg	JU		20	10		
Bromoform	20		ug/kg	JU		20	10		
Bromomethane	48		ug/kg	J		40	10		
Carbon disulfide	140		ug/kg	J		20	10		
Carbon tetrachloride	20		ug/kg	JU		20	10		
Chlorobenzene	20		ug/kg	JU		20	10		
Chloroethane	40		ug/kg	JU		40	10		
Chloroform	20		ug/kg	JU		20	10		
Chloromethane	40		ug/kg	JU		40	10		
Dibromochloromethane	20		ug/kg	JU		20	10		
Ethylbenzene	20		ug/kg	JU		20	10		
Methylene chloride	28		ug/kg	J		20	10		
Tetrachloroethene	20		ug/kg	JU		20	10		
Toluene	20		ug/kg	JU		20	10		
Trichloroethene	20		ug/kg	JU		20	10		
Trichlorofluoromethane	40		ug/kg	JU		40	10		
Vinyl chloride	10		ug/kg	JU		10	10		
cis-1,2-Dichloroethene	20		ug/kg	JU		20	10		
trans-1,2-Dichloroethene	20		ug/kg	JU		20	10		

Comments: Due to matrix interferences, all four internal standards used to quantify the analytes failed the area lower limit criteria and all analytes are estimated as "J". The internal standards that failed the lower limit were pentafluorobenzene, 1,4-difluorobenzene, 2-bromo-1-chloropropane, and 1,4-difluorobenzene-d4.

All three surrogates failed the PORTS established recovery limits (dibromofluoromethane 143% -- upper limit=109%, toluene-d8 70% -- lower limit=91%, bromofluorobenzene 50% -- lower limit=87%).

This sample was spiked and the QC of the internal standards and surrogates were similar to the sample. Toluene failed the PORTS established MS recovery (67% -- lower limit=73%). Chlorobenzene failed the MS recovery (70% -- lower=72%).

There was a band of TICs (alkanes) ranging from approximately 22 minutes to 27 minutes. A listing is available upon request.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Detection Limit (DL).

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	<4		pCi/g				
Beta activity	12		pCi/g				

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	<1.2		pCi/g				

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	0.081	0.050	ug/g				
Uranium-235	NA		wt %				

Waste Stream Number: ER-3

Waste Stream Title: Soils

✓ Inner Smpl Id: VER44694001

t:X-04-WM BJC09824

ubproj Analyses:SOIL

Customer:J A APPLGATE

COC#: 54121

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: SOIL

Protocol:RCRA

Status: APPROVED

Location:

Sampled: 05/14/98 14:00:00

Received: 05/15/98 07:47:42

Needed: 06/19/98 00:00:00

Approved: 06/19/98 14:34:07

ER-3

Analy Meth:SW846-3050A	QC Batch:	Test:3050APREP	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/05/98 00:00:00 M L STEWART		Approver: D K PEREZ	06/15/98 16:25

Analy Meth:SW846-6010A	QC Batch:	Test:6010AMETALS5	Rpt Basis:none	Date Approved
Prep Meth: SW846-3050A	Analyzed:06/11/98 00:00:00 T E SHOOK		Approver: D K PEREZ	06/19/98 10:57

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	9870		mg/kg				1		
Antimony	1.7		mg/kg	*NU			1		
Arsenic	2.3		mg/kg	*U			1		Y
Barium	56.3		mg/kg	*B			1		Y
Beryllium	0.62		mg/kg	B			1		
Cadmium	0.82		mg/kg	B			1		Y
Calcium	8720		mg/kg				1		
Chromium	17.4		mg/kg	B			1		Y
Copper	9.8		mg/kg	B			1		
Lead	13.9		mg/kg	B			1		
Iron	17200		mg/kg				1		
Lead	10		mg/kg	BN			1		Y
Magnesium	7060		mg/kg	*			1		
Manganese	321		mg/kg	B			1		
Molybdenum	0.28		mg/kg	U			1		
Nickel	26.2		mg/kg	*BJN			1		
Potassium	1020		mg/kg	BN			1		
Selenium	3.5		mg/kg	NU			1		Y
Silver	0.48		mg/kg	U			1		Y
Sodium	137		mg/kg	BN			1		
Thallium	10.4		mg/kg	B			1		
Vanadium	11.1		mg/kg	BN			1		
Zinc	70.7		mg/kg	B			1		

Comments: QC File:98080457

Ni qualified as estimate due to interference check not meeting acceptance limits.

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- C - Qualify data for the sample as estimated.
- D - Sample spike recovery not within control limits.
- E - Analyte analyzed for but undetected. Analyte result was below the Instrument

Detection Limit (IDL).

Analy Meth: SW846-8260A	QC Batch: QC98141001 Test: VOA	Rpt Basis: none	Date Appr
Prep Meth:	Analyzed: 05/20/98 00:00:00 J N STRICKLAND	Approver: C J VANMETER	06/04/98 16:44

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	21		ug/kg			20	10		
1,1,2,2-Tetrachloroethane	20		ug/kg	U		20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	140		ug/kg			20	10		
1,1,2-Trichloroethane	20		ug/kg	U		20	10		
1,1-Dichloroethane	20		ug/kg	U		20	10		
1,1-Dichloroethene	20		ug/kg	U		20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/kg	U		40	10		
1,2-Dichlorobenzene	20		ug/kg	U		20	10		
1,2-Dichloroethane	20		ug/kg	U		20	10		
1,2-Dimethylbenzene	20		ug/kg	U		20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/kg	U		20	10		
1,3-Dichlorobenzene	20		ug/kg	U		20	10		
1,4-Dichlorobenzene	20		ug/kg	U		20	10		
2-Butanone	500		ug/kg	U		500	10		
4-Methyl-2-pentanone	500		ug/kg	U		500	10		
Acetone	500		ug/kg	U		500	10		
Benzene	20		ug/kg	U		20	10		
Bromodichloromethane	20		ug/kg	U		20	10		
Bromoform	20		ug/kg	U		20	10		
Bromomethane	40		ug/kg	U		40	10		
on disulfide	20		ug/kg	U		20	10		
on tetrachloride	20		ug/kg	U		20	10		
Chlorobenzene	20		ug/kg	U		20	10		
Chloroethane	40		ug/kg	U		40	10		
Chloroform	20		ug/kg	U		20	10		
Chloromethane	40		ug/kg	U		40	10		
Dibromochloromethane	20		ug/kg	U		20	10		
Ethylbenzene	20		ug/kg	U		20	10		
Methylene chloride	20		ug/kg	U		20	10		
Tetrachloroethene	20		ug/kg	U		20	10		
Toluene	20		ug/kg	U		20	10		
Trichloroethene	1100		ug/kg	EJ		20	10		
Trichlorofluoromethane	40		ug/kg	U		40	10		
Vinyl chloride	10		ug/kg	U		10	10		
cis-1,2-Dichloroethene	160		ug/kg			20	10		
trans-1,2-Dichloroethene	20		ug/kg	U		20	10		

Comments: This sample was spiked and trichloroethane failed the PORTS established recovery limit (212% -- upper limit=119%). The result is estimated as "J" because of the high spike recovery which is probably due to the nonhomogenous sample.

EPA Qualifiers:

E - Result exceeds calibration range. (GC/MS flag)

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of quantitation (LOQ).

Portsmouth Analytical Laboratory
Official Report

Meth:PORTS-XP4-TS-RL7240	QC Batch:QC98167002 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
rep Meth:	Analyzed:06/11/98 00:00:00 J P BREWSTER	Approver: B W SHORT	06/16/98 16:05

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	77		pCi/g				
Beta activity	26		pCi/g				

Analy Meth:PORTS-XP4-TS-RL7340	QC Batch:QC98167001 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/15/98 00:00:00 J P BREWSTER	Approver: B W SHORT	06/16/98 16:03

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	36.6		pCi/g				

Analy Meth:PORTS-XP4-TS-RL7620ug	QC Batch:QC98170000 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/15/98 00:00:00 R J ANDRE	Approver: B W SHORT	06/19/98 14:31

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	11	1.2	ug/g				
Uranium-235	20	3.6	wt %				

Waste Stream Number: ER-4A and 4B

Waste Stream Title: Oil and Debris

WASTE STREAM:

ER-4

DATE:

12/5/94

RFD#

CONT#

CONT WT U (PPM)

U-235(frct) U-235 (g)

: =====

GIVEN THE NATURE OF THIS WASTE STREAM (OILS FROM ER
PROJECTS), THIS WASTE STREAM IS CONSIDERED NON-U
BEARING.

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:
01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:
AMERICAN BURDICK & JACKSON
1953 SOUTH HARVEY STREET
MUSKEGON
MI

49442
PHONE: PHONE: 616-726-3171
EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 176 F	NOTE: 80'C, 760 MM HG.
Melting Point. . . .	NG	
Freezing Point. . . .	EQ 41.9 F	NOTE: 5.5'C.
Four Point.	NG	
ftening Point. . . .	NG	
Specific Gravity . . .	EQ .879	NOTE: @ 20'C.
Vapor Pressure	EQ 74.6	NOTE: MM HG @ 20'C.
Vapor Density.	EQ 2.8	
Percent Volatiles. . .	~ 100	
Evaporation Rate . . .	~ 3	NOTE: BUAC=1.
pH	NG	
Molecular Weight . . .	EQ 78.11	
Viscosity.	NG	
Solubility in Water. @ 25C	0.18%.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . .	EQ 12.2 F	NOTE: -11'C, TCC.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	EQ 1043.6 F	NOTE: 562'C.
Explosive/Flammable Limits		
Lower (LEL).	EQ 1.3	
Upper (UEL).	EQ 7.1	

Shipping Regulations

UN/NA Number. UN1114
D.O.T. Hazard Class. . . . FLAMMABLE LIQUID
Label NOT GIVEN
Proper Shipping Name . . . BENZENE

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== FIRE AND EXPLOSION HAZARD DATA =====

THE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

USUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

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Waste Stream Number: ER-5A and 5B

Waste Stream Title: Carbon Sludge and Spent Treatment Filters

VER41508001

Portsmouth Analytical Laboratory

X981620019

Official Report

C r Smpl Id: VER41508001

Matrix: SOLID

Sampled: 06/10/98 13:50:00

:X-04-WM BJC09824

Protocol:RCRA

Received: 06/11/98 13:05:14

ubproj Analyses:SOLID

Status: APPROVED

Needed: 07/16/98 23:59:00

Customer:J A APPLGATE

Location:

Approved: 07/16/98 17:55:46

COC#: 059693

Sample Desc:

Customer Comments:

Lab Smpl Comments:

ER-5A

Analy Meth:SW846-3050A	QC Batch:	Test:3050APREP	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/23/98 00:00:00 K A DAYS		Approver: D K PEREZ	07/13/98 11:20

Analy Meth:SW846-6010A	QC Batch:	Test:6010AMETALS5	Rpt Basis:none	Date Approved
Prep Meth: SW846-3050A	Analyzed:06/25/98 00:00:00 T E SHOOK		Approver: D K PEREZ	07/16/98 14:00

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	278		mg/kg	B			1		
Antimony	4.0		mg/kg	U			1		
Arsenic	2.9		mg/kg	U			1		N
Barium	57.1		mg/kg	BN			1		N
Beryllium	0.41		mg/kg	B			1		
Cadmium	28.1		mg/kg	N			1		Y
Calcium	4390		mg/kg	*B			1		
Chromium	164		mg/kg	N			1		Y
Copper	2.5		mg/kg	B			1		
Iron	3.3		mg/kg	B			1		
Lead	655		mg/kg	B			1		
Lead	521		mg/kg	*			1		Y
Magnesium	553		mg/kg	B			1		
Manganese	2000		mg/kg				1		
Molybdenum	4.4		mg/kg	B			1		
Nickel	18.6		mg/kg	B			1		
Potassium	39.2		mg/kg	BJ			1		
Selenium	3.3		mg/kg	U			1		Y
Silver	0.40		mg/kg	U			1		N
Sodium	126		mg/kg	B			1		
Thallium	3.8		mg/kg	NU			1		
Vanadium	2.7		mg/kg	B			1		
Zinc	31.2		mg/kg	B			1		

Comments: QC File: 98080486

K qualified as estimate due to interference check not meeting acceptance limits.

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- N - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

A Meth:SW846-3540	QC Batch:QC98194007 Test:ORGEXT-SVOC	Rpt Basis:none	Date Appr
Prep Meth:	Analyzed:06/23/98 00:00:00 D K SCAGGS	Approver: C J VANMETER	07/16/98 1

Comments: Method SW846-3540B: Semi-volatile prep

This sample matrix consisted of carbon, PPE, plastic tape, and a small amount of paper waste. A smaller weight of sample was used for extraction to reduce this sample matrix interference.

Foaming was observed during the first phase of concentration and the extract had a gluey-type consistency. A nitrogen purge was used to complete the second phase of concentration. Due to the sample matrix interference, the final volume was 25ml.

Analy Meth:SW846-8270B	QC Batch:QC98194009 Test:SVOC	Rpt Basis:none	Date Approved
Prep Meth: SW846-3540	Analyzed:07/07/98 00:00:00 R J WAWRO	Approver: C J VANMETER	07/16/98 17:54

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	29000		ug/kg	U		29000	1		
1,2-Dichlorobenzene	29000		ug/kg	U		29000	1		
1,3-Dichlorobenzene	29000		ug/kg	U		29000	1		
1,4-Dichlorobenzene	29000		ug/kg	U		29000	1		
2,4,5-Trichlorophenol	29000		ug/kg	U		29000	1		
2,6-Trichlorophenol	29000		ug/kg	U		29000	1		
1,2,4-Trichlorophenol	29000		ug/kg	U		29000	1		
1,3-Dimethylphenol	29000		ug/kg	U		29000	1		
2,4-Dinitrophenol	144000		ug/kg	JU		144000	1		
2,4-Dinitrotoluene	29000		ug/kg	U		29000	1		
2,6-Dinitrotoluene	29000		ug/kg	U		29000	1		
2-Chloronaphthalene	29000		ug/kg	U		29000	1		
2-Chlorophenol	29000		ug/kg	U		29000	1		
2-Methyl-4,6-dinitrophenol	144000		ug/kg	JU		144000	1		
2-Methylphenol	29000		ug/kg	U		29000	1		
2-Nitrophenol	29000		ug/kg	U		29000	1		
3(4)-Methylphenol	29000		ug/kg	U		29000	1		
4-Bromophenyl phenyl ether	29000		ug/kg	U		29000	1		
4-Chloro-3-methylphenol	58000		ug/kg	U		58000	1		
4-Chlorophenylphenyl ether	29000		ug/kg	U		29000	1		
4-Nitrophenol	144000		ug/kg	JU		144000	1		
Acenaphthene	29000		ug/kg	U		29000	1		
Acenaphthylene	29000		ug/kg	U		29000	1		
Anthracene	29000		ug/kg	U		29000	1		
Benzo(a)anthracene	29000		ug/kg	U		29000	1		
Benzo(a)pyrene	29000		ug/kg	U		29000	1		
Benzo(b)fluoranthene	29000		ug/kg	U		29000	1		
Benzo(ghi)perylene	29000		ug/kg	U		29000	1		
Benzo(k)fluoranthene	29000		ug/kg	U		29000	1		
Bis(2-chloroethoxy)methane	29000		ug/kg	U		29000	1		
Bis(2-chloroethyl) ether	29000		ug/kg	U		29000	1		
2-chloroisopropyl ether	29000		ug/kg	U		29000	1		

Official Report

e Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
ethylhexyl)phthalate	29000		ug/kg	U		29000	1		
utylbenzylphthalate	29000		ug/kg	U		29000	1		
Chrysene	29000		ug/kg	U		29000	1		
Di-n-butylphthalate	29000		ug/kg	U		29000	1		
Di-n-octylphthlate	180000		ug/kg	J		29000	1		
Dibenz(a,h)anthracene	29000		ug/kg	U		29000	1		
Diethylphthalate	29000		ug/kg	U		29000	1		
Dimethylphthalate	29000		ug/kg	U		29000	1		
Diphenyldiazene	29000		ug/kg	U		29000	1		
Fluoranthene	29000		ug/kg	U		29000	1		
Fluorene	29000		ug/kg	U		29000	1		
Hexachlorobenzene	29000		ug/kg	U		29000	1		
Hexachlorobutadiene	29000		ug/kg	U		29000	1		
Hexachlorocyclopentadiene	29000		ug/kg	JU		29000	1		
Hexachloroethane	29000		ug/kg	U		29000	1		
Indeno(1,2,3-cd)pyrene	29000		ug/kg	U		29000	1		
Isophorone	29000		ug/kg	U		29000	1		
N-Nitroso-di-n-propylamine	29000		ug/kg	U		29000	1		
N-Nitrosodimethylamine	29000		ug/kg	U		29000	1		
N-Nitrosodiphenylamine	29000		ug/kg	U		29000	1		
Naphthalene	29000		ug/kg	U		29000	1		
Nitrobenzene	29000		ug/kg	U		29000	1		
Pentachlorophenol	144000		ug/kg	U		144000	1		
Phenanthrene	29000		ug/kg	U		29000	1		
Phenol	29000		ug/kg	U		29000	1		
Pyrene	29000		ug/kg	U		29000	1		
Quinoline	29000		ug/kg	U		29000	1		

Comments: The final extract concentrate volume was 25mL because of the large quantity of methylene chloride extractable compounds extracted from this sample. The GC/MS chromatogram had an intense band tentatively identified compounds (TICs) eluting from ~30 to 34 minutes. The primary components of this TIC band were phthalate esters which coeluted with the last of 6 internal standards, perylene-d12, and caused recovery of this internal standard to fail method criteria. This was also the case for a 2x dilution of this sample, however the fifth internal standard also failed criteria. But the internal standard areas were all acceptable in the all of MS and MSD extracts.

4-Nitrophenol recovery was below PORTS established criteria in the MS and MSD extracts and was reported as an estimated value. Hexachlorocyclopentadiene was also below PORTS established criteria in the MS/MSD and LCS for this extraction batch and was reported as an estimated value. Pentachlorophenol, 2,4-Dinitrophenol, and 4,6-Dinitro-2-Methylphenol recoveries were below criteria in only the MS samples.

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(30%), 4,6-dinitro-2-methylphenol(20%), and 4-nitrophenol(19%).

Sample homogeneity may have been a problem as indicated by poor recovery of the one target hit (Di-n-octylphthalate) in a spiked aliquot of this sample. This poor recovery led to the estimation of Di-n-octylphthalate.

Analy Meth: SW846-8260A QC Batch: QC98176003 Test: VOA Rpt Basis: none Date Approved
 Prep Meth: Analyzed: 06/23/98 00:00:00 J N STRICKLAND Approver: C J VANMETER 07/07/98 16:20

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	3200		ug/kg			2000	1000		
1,1,2,2-Tetrachloroethane	2000		ug/kg	U		2000	1000		
1,1,2-Trichloro-1,2,2-trifluoroethane	2000		ug/kg	U		2000	1000		
1,1,2-Trichloroethane	2000		ug/kg	U		2000	1000		
1,1-Dichloroethane	2000		ug/kg	U		2000	1000		
1,1-Dichloroethene	2000		ug/kg	U		2000	1000		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	4000		ug/kg	U		4000	1000		
1,2-Dichlorobenzene	2000		ug/kg	U		2000	1000		
1,2-Dichloroethane	2000		ug/kg	U		2000	1000		
1,2-Dimethylbenzene	2000		ug/kg	U		2000	1000		
1,3 (1,4)-Dimethylbenzene	2000		ug/kg	U		2000	1000		
1,3-Dichlorobenzene	2000		ug/kg	U		2000	1000		
1,4-Dichlorobenzene	2000		ug/kg	U		2000	1000		
2-Butanone	50000		ug/kg	U		50000	1000		
4-Methyl-2-pentanone	50000		ug/kg	U		50000	1000		
Acetone	50000		ug/kg	U		50000	1000		
Benzene	2000		ug/kg	U		2000	1000		
Permethrin	2000		ug/kg	U		2000	1000		
form	2000		ug/kg	U		2000	1000		
methane	4000		ug/kg	U		4000	1000		
Carbon disulfide	2000		ug/kg	U		2000	1000		
Carbon tetrachloride	2000		ug/kg	U		2000	1000		
Chlorobenzene	2000		ug/kg	U		2000	1000		
Chloroethane	4000		ug/kg	U		4000	1000		
Chloroform	2000		ug/kg	U		2000	1000		
Chloromethane	4000		ug/kg	U		4000	1000		
Dibromochloromethane	2000		ug/kg	U		2000	1000		
Ethylbenzene	2000		ug/kg	U		2000	1000		
Methylene chloride	2000		ug/kg	U		2000	1000		
Tetrachloroethene	2000		ug/kg	U		2000	1000		
Toluene	150000		ug/kg	E		2000	1000		
Trichloroethene	43000		ug/kg			2000	1000		
Trichlorofluoromethane	4000		ug/kg	U		4000	1000		
Vinyl chloride	1000		ug/kg	U		1000	1000		
cis-1,2-Dichloroethene	2000		ug/kg	U		2000	1000		
trans-1,2-Dichloroethene	2000		ug/kg	U		2000	1000		

Comments: This sample was analyzed by the high level method which results in higher reporting limits.

Bromofluorobenzene failed the PORTS established surrogate recovery limits (80%
 -- lower limit=85%).

EF alifiers:

 sult exceeds calibration range. (GC/MS flag)

J - Estimated value.

U 'yte analyzed for but undetected. Analyte result was below the Limit of
titation (LOQ).

Analy Meth:PORTS-XP4-TS-RL7280	QC Batch:QC98194012 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/08/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/13/98 13:55

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	<6		pCi/g			6	
Beta activity	16		pCi/g			13	

Analy Meth:PORTS-XP4-TS-RL7385	QC Batch:QC98194016 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/08/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/14/98 09:12

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	80.4		pCi/g			1.0	

Analy Meth:PORTS-XP4-TS-RL7710ug	QC Batch:QC98170002 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:06/15/98 00:00:00 R J ANDRE	Approver: B W SHORT	06/19/98 14:51

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	14	1.7	ug/g				
Uranium-235	2.1	0.47	wt %				

VER44248001

Portsmouth Analytical Laboratory
Official Report

X981350001

r er Smpl Id: VER44248001

Matrix: SOLID

Sampled: 05/14/98 13:40:00

i c:X-04-WM BJC09824

Protocol:RCRA

Received: 05/15/98 07:47:22

Subproj Analyses:SOLID

Status: APPROVED

Needed: 06/19/98 00:00:0

Customer:J A APPLGATE

Location:

Approved: 06/19/98 14:51:52

COC#: 54121

Sample Desc:

Customer Comments:

Lab Smpl Comments:

ER-5B

Analy Meth:SW846-8260A

QC Batch:QC98141001 Test:VOA

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:05/20/98 00:00:00 J N STRICKLAND

Approver: C J VANMETER

06/04/98 16:42

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	210		ug/kg	J		20	10		
1,1,2,2-Tetrachloroethane	20		ug/kg	JU		20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	38		ug/kg	J		20	10		
1,1,2-Trichloroethane	20		ug/kg	U		20	10		
1,1-Dichloroethane	24		ug/kg	J		20	10		
1,1-Dichloroethene	33		ug/kg	J		20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/kg	JU		40	10		
1,2-Dichlorobenzene	20		ug/kg	JU		20	10		
1,2-Dichloroethane	20		ug/kg	JU		20	10		
1,2-Dimethylbenzene	20		ug/kg	JU		20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/kg	JU		20	10		
1,3-Dichlorobenzene	20		ug/kg	JU		20	10		
1,4-Dichlorobenzene	20		ug/kg	JU		20	10		
anone	500		ug/kg	JU		500	10		
ethyl-2-pentanone	500		ug/kg	U		500	10		
Acetone	500		ug/kg	JU		500	10		
Benzene	20		ug/kg	JU		20	10		
Bromodichloromethane	20		ug/kg	U		20	10		
Bromoform	20		ug/kg	JU		20	10		
Bromomethane	40		ug/kg	JU		40	10		
Carbon disulfide	920		ug/kg	EJ		20	10		
Carbon tetrachloride	20		ug/kg	JU		20	10		
Chlorobenzene	20		ug/kg	JU		20	10		
Chloroethane	40		ug/kg	JU		40	10		
Chloroform	20		ug/kg	JU		20	10		
Chloromethane	40		ug/kg	JU		40	10		
Dibromochloromethane	20		ug/kg	JU		20	10		
Ethylbenzene	20		ug/kg	JU		20	10		
Methylene chloride	20		ug/kg	JU		20	10		
Tetrachloroethene	190		ug/kg	J		20	10		
Toluene	20		ug/kg	U		20	10		
Trichloroethene	1700		ug/kg	EJ		20	10		
Trichlorofluoromethane	40		ug/kg	JU		40	10		
Vinyl chloride	10		ug/kg	JU		10	10		
cis-1,2-Dichloroethene	16000		ug/kg	EJ		20	10		
trans-1,2-Dichloroethene	67		ug/kg	J		20	10		

Comments: Due to matrix interferences, three of the four internal standards used to quantify the analytes failed the area lower limit criteria and the associated analyte results are estimated as "J". The internal standards that failed the lower limit were pentafluorobenzene, 2-bromo-1-chloropropane, and 1,4-difluorobenzene-d4.

All three surrogates failed the PORTS established recovery limits
(dibromofluoromethane 158% -- upper limit=109%, toluene-d8 69% -- lower
limit=91%, bromofluorobenzene 53% -- lower limit=87%).

The analyte cis-1,2-dichloroethene saturated the detector and the result could
be much higher.

This sample was spiked and the QC of the internal standards and surrogates
were similar to the sample. The concentration of trichloroethene was higher in
the sample than in the MS which was probably due to the nonhomogeneous sample
and the result is estimated as "J".

EPA Qualifiers:

E - Result exceeds calibration range. (GC/MS flag)

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of
Quantitation (LOQ).

Analy Meth:PORTS-XP4-TS-RL7280		QC Batch:QC98167002 Test:AB-ACT-GPC		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:06/11/98 00:00:00 J P BREWSTER		Approver: B W SHORT		06/16/98 16:05	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	17		pCi/g				
activity	98		pCi/g				
Analy Meth:PORTS-XP4-TS-RL7385		QC Batch:QC98167001 Test:TC99-ACT-LS		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:06/15/98 00:00:00 J P BREWSTER		Approver: B W SHORT		06/16/98 16:02	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	67.3		pCi/g				
Analy Meth:PORTS-XP4-TS-RL7710ug		QC Batch:QC98170002 Test:TOTAL-U-AS		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:06/15/98 00:00:00 R J ANDRE		Approver: B W SHORT		06/19/98 14:49	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	5.6	0.73	ug/g				
Uranium-235	3.0	0.71	wt %				

Waste Stream Number: ER-6

Waste Stream Title: Neat Trichloroethylene

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ER-6
DOE

AnalIS ID: 960725-052 Project: ER 9567DC Requisition Number: 010903
Customer Sample ID: VER37121001 Customer: ENV RESTORATION
Date Sampled: 24-JUL-1996 13:00 Date Sample Received: 24-JUL-1996
Sampled By: M MCROBERTS Date Sample Completed: 4-SEP-1996
Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3580	Sample Prep Semi-Volatiles	COMPLETE			BD FUHR	24-JUL-1996	96160207
SW846-90408	pH	6.09		pH units	CJ HOLBROOK	25-JUL-1996	96100989
TSD553-230	Gross Alpha	<.23		pCi/ml	JP BREWSTER	8-AUG-1996	96071073
	Gross Beta	<.48		pCi/ml	JP BREWSTER	8-AUG-1996	96071073
TSD553-380	Technetium	<0.8		pCi/mL	CD GOOD	3-SEP-1996	96071222
TSD553-710	% U-235	NA		%	SJ JAMES	2-AUG-1996	96071041
	Uranium	<0.012		ug/mL	SJ JAMES	2-AUG-1996	96071041

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)

Date Approved: 4-SEP-1996

***** COMMENT PAGE *****
***** 960725-052 *****

* Comments from the Environmental and Industrial Hygiene Laboratory *****

SW846-9040B pH: The replicate result for this sample is 6.18 pH units.

***** Comments from the Organic Analytical Services *****

SW846-8260A

Sample was analyzed by the high level method which involves a methanolic extraction and results in higher detection limits. Results are reported in mg/kg not ug/kg as usually reported for VOC results, due to the limited number of characters which can be reported in the ANALIS system.

Due to solvent content in sample matrix (Trichloroethene) which required a high dilution, surrogates were analyzed at a very low concentration. As a result of the high dilution, Dibromofluoromethane and Bromofluorobenzene did not meet established criteria for surrogate recovery.

SW846-8270A

Sample was prepared by the waste dilution method because of the nature of the sample's matrix, which results in the higher detection limits reported here.

Five compounds were reported as ND (not detected), these are compounds that are not in calibration standards prepared by the lab. However, these compounds have been extensively tested in the lab for GC/MS information. If these compounds been detected the sample would have been reinjected against a valid calibration curve for these compounds.

I - Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.

The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

- P - Probable Identification.

ANALYSIS DATA REPORT

AnaLIS ID: 960725-052
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#3
 Authorized By: C. J. Van Meter

Customer Sample ID: VER37121001
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 010903
 Date Sample Received: 24-JUL-1996
 Date Sampled: 24-JUL-1996

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 29-JUL-1996
 QA File Number: 96160729A3
 Dilution Factor: 100
 Analyst: MA NOVOTNY

CAS		mg/kg	CAS		mg/kg
67-64-1	Acetone	10000U	100-41-4	Ethyl benzene	200U
71-43-2	Benzene	200U	76-13-1	Freon 113	200U
75-27-4	Bromodichloromethane	200U	76-14-2	Freon 114	400U
75-25-2	Bromoform	200U	108-10-1	4-Methyl-2-pentanone	10000U
74-83-9	Bromomethane	400U	75-09-2	Methylene Chloride	200U
78-93-3	2-Butanone	10000U	79-34-5	1,1,2,2-Tetrachloroethane	200U
75-15-0	Carbon Disulfide	200U	127-18-4	Tetrachloroethene	1400
56-23-5	Carbon Tetrachloride	200U	108-88-3	Toluene	200U
108-90-7	Chlorobenzene	200U	71-55-6	1,1,1-Trichloroethane	200U
75-00-3	Chloroethane	400U	79-00-5	1,1,2-Trichloroethane	200U
67-66-3	Chloroform	200U	79-01-6	Trichloroethene	68000E
74-87-3	Chloromethane	400U	75-69-4	Trichlorofluoromethane	400U
124-48-1	Dibromochloromethane	200U	75-01-4	Vinyl Chloride	100U
106-46-7	1,4-Dichlorobenzene	200U	1330-20-7	m,p-Xylene	200U
95-50-1	1,2-Dichlorobenzene	200U	95-47-6	o-Xylene	200U
541-73-1	1,3-Dichlorobenzene	200U			
75-34-3	1,1-Dichloroethane	200U			
107-06-2	1,2-Dichloroethane	200U			
75-35-4	1,1-Dichloroethene	200U			
156-59-2	cis-1,2-Dichloroethene	4100			
156-60-5	trans-1,2-Dichloroethene	200U			

ANALYSIS DATA REPORT

AnaLIS ID: 960725-052
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: SV2
 Authorized By: C. J. Van Meter

Customer Sample ID: VER37121001
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 010903
 Date Sample Received: 24-JUL-1996
 Date Sampled: 24-JUL-1996

Semi-Volatiles

Date Extracted/Prepared: 24-JUL-1996
 Analysis Procedure Number: SW846-8270A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 29-JUL-1996
 QA File Number: 96160729B02
 Dilution Factor: 1.0
 Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
59-50-7	4-Chloro-3-methylphenol	104000U	606-20-2	2,6-Dinitrotoluene	52000U
95-57-8	2-Chlorophenol	52000U	78-59-1	Isophorone	52000U
120-83-2	2,4-Dichlorophenol	52000U	98-95-3	Nitrobenzene	52000U
105-67-9	2,4-Dimethylphenol	52000U	83-32-9	Acenaphthene	52000U
51-28-5	2,4-Dinitrophenol	260000U	208-96-8	Acenaphthylene	52000U
534-52-1	4,6-Dinitro-2-methylphenol	260000U	120-12-7	Anthracene	52000U
88-75-5	2-Nitrophenol	52000U	56-55-3	Benzo(a)anthracene	52000U
100-02-7	4-Nitrophenol	260000U	50-32-8	Benzo(a)pyrene	52000U
87-86-5	Pentachlorophenol	260000U	191-24-2	Benzo(g,h,i)perylene	52000U
108-95-2	Phenol	52000U	76-01-7	Benzo(k)fluoranthene	52000U
88-06-2	2,4,6-Trichlorophenol	52000U	218-01-9	Chrysene	52000U
117-81-7	bis(2-Ethylhexyl)phthalate	52000U	53-70-3	Dibenz(a,h)anthracene	52000U
85-68-7	Butylbenzylphthalate	52000U	206-44-0	Fluoranthene	52000U
84-74-2	Di-n-butylphthalate	52000U	86-73-7	Fluorene	52000U
84-66-2	Diethylphthalate	52000U	193-39-5	Indeno(1,2,3-cd)pyrene	52000U
131-11-3	Dimethylphthalate	52000U	91-20-3	Naphthalene	52000U
117-84-0	di-n-Octylphthalate	52000U	85-01-8	Phenanthrene	52000U
62-75-9	N-Nitrosodimethylamine	52000U	129-00-0	Pyrene	52000U
86-30-6	N-Nitrosodiphenylamine	52000U	111-44-4	bis(2-Chloroethyl)ether	52000U
621-64-7	N-Nitroso-di-n-propylamine	52000U	111-91-1	bis(2-Chloroethoxy)methane	52000U
121-14-2	2,4-Dinitrotoluene	52000U	39638-32-9	bis(2-Chloroisopropyl)ether	52000U

ANALYSIS DATA REPORT

AnalIS ID: 960725-052
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV2
Authorized By: C. J. Van Meter

Customer Sample ID: VER37121001
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 010903
Date Sample Received: 24-JUL-1996
Date Sampled: 24-JUL-1996

Semi-Volatiles

Date Extracted/Prepared: 24-JUL-1996
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-JUL-1996
QA File Number: 96160729B02
Dilution Factor: 1.0
Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
101-55-3	4-Bromophenyl-phenylether	52000U			
7005-72-3	4-Chlorophenyl-phenylether	52000U			
91-58-7	2-Chloronaphthalene	52000U			
95-50-1	1,2-Dichlorobenzene	52000U			
541-73-1	1,3-Dichlorobenzene	52000U			
106-46-7	1,4-Dichlorobenzene	52000U			
118-74-1	Hexachlorobenzene	52000U			
87-68-3	Hexachlorobutadiene	52000U			
77-47-4	Hexachlorocyclopentadiene	52000U			
67-72-1	Hexachloroethane	52000U			
120-82-1	1,2,4-Trichlorobenzene	52000U			
110-86-1	Pyridine	ND			
	2-Methylphenol (o-Cresol)	ND			
	3,4-Methylphenol (m,p-Cresol)	ND			
95-95-4	2,4,5-Trichlorophenol	ND			
	Azobenzene	52000U			
205-99-2	Benzo(b)fluoranthene	52000U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

SVOA_8270 ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 960725-052

Laboratory: Organic Analytical Services

Sample Matrix: LIQUID WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

% Moisture: not dec.

Customer Sample ID: VER37121001

Customer: ENV RESTORATION

File ID:

Date Received: 24-JUL-1996

Date Analyzed: 29-JUL-1996

Concentration Units: ug/Kg

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 79-01-6	Trichloroethene	3.42	9320000	J
2. 108-88-3	Toluene	4.25	52000	J
3. 79-00-5	1,1,2-Trichloroethane	4.52	332000	J
4. 127-18-4	Tetrachloroethene	5.17	1480000	J
5. 630-20-6	1,1,1,2-Tetrachloroethane	6.35	84300	J
6.				
7.				
8.				
9.				
10.				
11.				
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23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: ER-7

Waste Stream Title: Surface Water

J. ER-7

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

Analysis ID: 960308-148 Project: ER 9567C Requisition Number: 20244
Customer Sample ID: VER34520001 Customer: ENV RESTORATION
Date Sampled: 8-MAR-1996 12:45 Date Sample Received: 8-MAR-1996
Sampled By: R CAUDILL Date Sample Completed: 22-APR-1996
Material Description: RAIN WATER

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
EPA 413.1	Oil & Grease (Water)	36.5		mg/L	LL CROSS	18-MAR-1996	96100388
SW846-3010A	Sample Prep Metals	COMPLETE			ML STEWART	18-MAR-1996	031896-036
SW846-3510	Sample Prep PCB	COMPLETE			SL EWING	13-MAR-1996	96160085
SW846-6010A	Arsenic	23.4UJ		ug/L	TE SHOOK	18-MAR-1996	96080306
	Barium	31.6		ug/L	TE SHOOK	18-MAR-1996	96080306
	Cadmium	2.4		ug/L	TE SHOOK	18-MAR-1996	96080306
	Chromium	11.7		ug/L	TE SHOOK	18-MAR-1996	96080306
	Lead	40.1		ug/L	TE SHOOK	18-MAR-1996	96080306
	Selenium	35.9U		ug/L	TE SHOOK	18-MAR-1996	96080306
	Silver	4.9UN		ug/L	TE SHOOK	18-MAR-1996	96080306
SW846-8080	PCB-1232	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	PCB-1242	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	PCB-1248	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	PCB-1254	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	PCB-1260	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	PCB-1268	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2
	Total PCB	< 5J		ug/L	DH BLUE	27-MAR-1996	96160322M2

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	400	364.71	91.18
Barium	400	367.12	91.78
Cadmium	400	367.82	91.96
Chromium	400	351.22	87.81
Lead	400	329.57	82.39
Selenium	400	314.95	78.74
Silver	400	40.32	10.08

y Manager: D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)

***** COMMENT PAGE *****

***** 960308-148 *****

* Comments from the Organic Analytical Services *****

SW846-8260A

2-Butanone did not meet method criteria for the continuing calibration and is an estimate value.

SW846-8080:

Sample result was estimated due to low surrogate recovery

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A As qualified as estimate due to interference check not meeting Q.C. limits.

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Flagging "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnaLIS ID: 960308-148
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#1
 Authorized By: C. J. Van Meter

Customer Sample ID: VER34520001
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 20244
 Date Sample Received: 8-MAR-1996
 Date Sampled: 8-MAR-1996

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 14-MAR-1996
 QA File Number: 96160314A1
 Dilution Factor: 1.0
 Analyst: MA NOVOTNY

CAS	ug/L	CAS	ug/L
67-64-1 Acetone	100U	100-41-4 Ethyl benzene	2U
71-43-2 Benzene	2U	76-13-1 Freon 113	4
75-27-4 Bromodichloromethane	2U	76-14-2 Freon 114	4U
75-25-2 Bromoform	2U	108-10-1 4-Methyl-2-pentanone	100U
74-83-9 Bromomethane	4U	75-09-2 Methylene Chloride	2U
78-93-3 2-Butanone	100UJ	79-34-5 1,1,2,2-Tetrachloroethane	2U
75-15-0 Carbon Disulfide	2U	127-18-4 Tetrachloroethene	2U
56-23-5 Carbon Tetrachloride	2U	108-88-3 Toluene	2U
108-90-7 Chlorobenzene	2U	71-55-6 1,1,1-Trichloroethane	12
75-00-3 Chloroethane	4U	79-00-5 1,1,2-Trichloroethane	2U
67-66-3 Chloroform	2U	79-01-6 Trichloroethene	2U
74-87-3 Chloromethane	4U	75-69-4 Trichlorofluoromethane	4U
124-48-1 Dibromochloromethane	2U	75-01-4 Vinyl Chloride	1U
106-46-7 1,4-Dichlorobenzene	2U	1330-20-7 m,p-Xylene	2U
95-50-1 1,2-Dichlorobenzene	2U	95-47-6 o-Xylene	2U
541-73-1 1,3-Dichlorobenzene	2U		
75-34-3 1,1-Dichloroethane	2U		
107-06-2 1,2-Dichloroethane	2U		
75-35-4 1,1-Dichloroethene	2U		
156-59-2 cis-1,2-Dichloroethene	2U		
156-60-5 trans-1,2-Dichloroethene	2U		

Waste Stream Number: ER-8

Waste Stream Title: Decontamination Water

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 971229-051 Project: ER 9762A Requisition Number: 54640
 Customer Sample ID: VER42898001 Customer: ENV RESTORATION
 Date Sampled: 23-DEC-1997 Date Sample Received: 23-DEC-1997
 Sampled By: R STANLY Date Sample Completed: 22-JAN-1998
 Material Description: DECON WATER & LIQUINOX

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
OA97333006	Gross Alpha	0.7		pCi/ml	JP BREWSTER	15-JAN-1998	98070061
	Gross Beta	0.4		pCi/ml	JP BREWSTER	15-JAN-1998	98070061
SW846-3010A	Sample Prep Metals	COMPLETE			ML STEWART	29-DEC-1997	122997-070
SW846-6010A	Aluminum	104NJ		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Antimony	22.6B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Arsenic	23.4U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Barium	4.6B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Beryllium	1.1U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Cadmium	11.6B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Calcium	5850J		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Chromium	3.4B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Cobalt	3.4U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Copper	70.3		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Iron	453		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Lead	63.5B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Magnesium	1780		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Manganese	69.9		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Molybdenum	2.9U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Nickel	60.1B		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Potassium	5040		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Selenium	35.9U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Silver	4.9U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Sodium	12500J		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Thallium	24.3U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Vanadium	2.5U		UG/L	EL SIMPSON	29-DEC-1997	98080052
	Zinc	504		UG/L	EL SIMPSON	29-DEC-1997	98080052
SW846-7470A	Mercury	10U		ug/L	RK SHORT	13-JAN-1998	98080032
TSD553-380	Technetium	<0.9		pCi/L	JP BREWSTER	15-JAN-1998	98070062
TSD553-700	% U-235	6.3	3.1	% U-235	CD GOOD	31-DEC-1997	97071774
	Uranium	0.17	0.043	ug/mL	CD GOOD	31-DEC-1997	97071774

Spike Recovery Data

ysis	Amount Spiked	Amount Recovered	Percent Recovered
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Mercury 40 43.6 109.00

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
C. J. Van Meter (Organic Analytical Services)

Date Approved: 22-JAN-1998

***** COMMENT PAGE *****
***** 971229-051 *****

*** Comments from the Organic Analytical Services ***

SW846-8260A

The results for Bromomethane are estimated due to the compound not meeting the requirements of the continuing calibration.

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Al qualified as estimate due to possible contamination. Ca and Na qualified as estimate due to lab control sample not meeting acceptance limits.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

ANALIS ID: 971229-051
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890-2
 Authorized By: C. J. Van Meter

Customer Sample ID: VER42898001
 Customer: ENV RESTORATION
 Sample Matrix: WATER
 Requisition Number: 54640
 Date Sample Received: 23-DEC-1997
 Date Sampled: 23-DEC-1997

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 2-JAN-1998
 QA File Number: 98160102A2
 Dilution Factor: 10
 Analyst: DE COLLINS

CAS	ug/L	CAS	ug/L
67-64-1 Acetone	500U	100-41-4 Ethyl benzene	20U
71-43-2 Benzene	20U	76-13-1 Freon 113	20U
75-27-4 Bromodichloromethane	20U	76-14-2 Freon 114	40U
75-25-2 Bromoform	20U	108-10-1 4-Methyl-2-pentanone	500U
74-83-9 Bromomethane	40UJ	75-09-2 Methylene Chloride	20U
78-93-3 2-Butanone	500U	79-34-5 1,1,2,2-Tetrachloroethane	20U
75-15-0 Carbon Disulfide	20U	127-18-4 Tetrachloroethene	20U
56-23-5 Carbon Tetrachloride	20U	108-88-3 Toluene	20U
108-90-7 Chlorobenzene	20U	71-55-6 1,1,1-Trichloroethane	20U
75-00-3 Chloroethane	40U	79-00-5 1,1,2-Trichloroethane	20U
67-66-3 Chloroform	20U	79-01-6 Trichloroethene	20U
74-87-3 Chloromethane	40U	75-69-4 Trichlorofluoromethane	40U
124-48-1 Dibromochloromethane	20U	75-01-4 Vinyl Chloride	10U
106-46-7 1,4-Dichlorobenzene	20U	1330-20-7 m,p-Xylene	20U
95-50-1 1,2-Dichlorobenzene	20U	95-47-6 o-Xylene	20U
541-73-1 1,3-Dichlorobenzene	20U		
75-34-3 1,1-Dichloroethane	20U		
107-06-2 1,2-Dichloroethane	20U		
75-35-4 1,1-Dichloroethene	20U		
156-59-2 cis-1,2-Dichloroethene	20U		
156-60-5 trans-1,2-Dichloroethene	20U		

Waste Stream Number: ER-9

Waste Stream Title: Brick, Concrete, and Masonry Waste

Waste stream ER-9 consists of brick, concrete and masonry waste that is removed from historically contaminated areas or from decommissioning activities. Each drum is assigned the appropriate waste code based on the listing of the waste that was present prior to the decommissioning.

Waste Stream Number: ER-10

Waste Stream Title: Floor Sweepings, Vacuum Dust, etc.

Waste stream ER-10 consists of floor sweepings, vacuum dust, etc, that is removed from historically contaminated areas. Each drum is assigned the appropriate waste code based on the listing of the waste that was present prior to the cleaning activity.

Waste Stream Number: 100-1

Waste Stream Title: Office Machine Repair Solvents

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

100-1
USEC

AnalIS ID: 960412-032 Project: ER 9567E Requisition Number: 20251
Customer Sample ID: VER35691001 Customer: ENV RETORATION
Date Sampled: 27-MAR-1996 Date Sample Received: 28-MAR-1996
Sampled By: CAUDILL Date Sample Completed: 24-APR-1996
Material Description: PHOTO

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3050A	Sample Prep Metals	COMPLETE			ML STEWART	12-APR-1996	041296-027
SW846-6010A	Aluminum	750000		mg/kg	TE SHOOK	12-APR-1996	96080341
	Antimony	105UN		mg/kg	TE SHOOK	12-APR-1996	96080341
	Arsenic	142UJ		mg/kg	TE SHOOK	12-APR-1996	96080341
	Barium	5.4UJ		mg/kg	TE SHOOK	12-APR-1996	96080341
	Beryllium	6.7U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Cadmium	10.9U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Calcium	415U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Chromium	18.1U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Cobalt	20.6U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Copper	42.3		mg/kg	TE SHOOK	12-APR-1996	96080341
	Iron	3240		mg/kg	TE SHOOK	12-APR-1996	96080341
	Lead	108U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Magnesium	147U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Manganese	8530		mg/kg	TE SHOOK	12-APR-1996	96080341
	Molybdenum	17.5U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Nickel	39.3U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Potassium	2010U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Selenium	217U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Silver	29.6U		mg/kg	TE SHOOK	12-APR-1996	96080341
	Sodium	944UJ		mg/kg	TE SHOOK	12-APR-1996	96080341
	Zinc	163N		mg/kg	TE SHOOK	12-APR-1996	96080341
TSD553-280	Gross Alpha	<3		pCi/g	BW SHORT	9-APR-1996	96070461
	Gross Beta	<5		pCi/g	BW SHORT	9-APR-1996	96070461
TSD553-385	Technetium	<24		pCi/g	BW SHORT	9-APR-1996	96070462
TSD553-710	% U-235	NA		%	SJ JAMES	10-APR-1996	96070466
	Uranium	<0.02		ug/g	SJ JAMES	10-APR-1996	96070466

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
Date Approved: 24-APR-1996

***** COMMENT PAGE *****
***** 960412-032 *****

Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Ba and Na qualified as estimate due to calibration verification not meeting acceptance limits.

SW846-6010A As qualified as estimate due to interference check not meeting acceptance limits.

Definition Page for Qualifiers/Flags

960412-032

I - Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
- The value is between the LC and the LLD.
- Using "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

(W) - 100-1

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 960219-112 Project: ER 9567E Requisition Number: 20229
Customer Sample ID: VER31922001 Customer: ENV RETORATION
Date Sampled: 19-FEB-1996 09:45 Date Sample Received: 19-FEB-1996
Sampled By: MB HAMEL Date Sample Completed: 25-MAR-1996
Material Description: PHOTORECEPTORS

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			LD DRYDEN	4-MAR-1996	030496-004
1311/3520	Sample Prep TCLP Semi-Volatile	COMPLETE			LD DRYDEN	4-MAR-1996	96160079
ACD-5101	Density	0.199		g/mL	ML STEWART	21-FEB-1996	96110015
ASTM-D2216	Moisture	0.5		%	ML STEWART	22-FEB-1996	96110016
SW846-1311	Sample Prep TCLP	COMPLETE			LD DRYDEN	27-FEB-1996	96170041
	Sample Prep TCLP	COMPLETE			LD DRYDEN	27-FEB-1996	96170041
SW846	Sample Prep Metals	COMPLETE			ML STEWART	22-FEB-1996	022296-058
SW846-3540	Sample Prep PCB	NA			DH BLUE	21-FEB-1996	NA
SW846-6010A	Aluminum	16.1		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Antimony	9.0		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Arsenic	2.1U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Barium	0.24		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Beryllium	0.10U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Cadmium	0.19		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Calcium	48.3N		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Chromium	23.0N		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Cobalt	0.53		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Copper	4.2		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Iron	172N		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Lead	1.6U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Magnesium	13.0		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Manganese	2.8		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Molybdenum	0.32		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Nickel	12.7N		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Potassium	30.5U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Selenium	3.3U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Silver	0.45UJ*		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Sodium	48.5		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Thallium	2.2UNJ		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Vanadium	0.23U		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
	Zinc	29.0		MG/KG	EL SIMPSON	22-FEB-1996	96R80242
SW846-8080	PCB-1232	NA			DH BLUE	21-FEB-1996	NA

PCB-1242	NA	DH BLUE	21-FEB-1996	NA
PCB-1248	NA	DH BLUE	21-FEB-1996	NA
PCB-1254	NA	DH BLUE	21-FEB-1996	NA
PCB-1260	NA	DH BLUE	21-FEB-1996	NA
PCB-1268	NA	DH BLUE	21-FEB-1996	NA
Total PCB	NA	DH BLUE	21-FEB-1996	NA

SW846-9010A	Total Cyanide	<1.0NJ	mg/kg	CJ HOLBROOK	22-FEB-1996	96100266
SW846-9020A	TOX	< 10.0	ug/g	DE COLLINS	11-MAR-1996	96160311T3
SW846-9030A	Sulfide	51.8	mg/kg	CJ HOLBROOK	28-FEB-1996	96100235
SW846-9045C	pH	5.75	ph units	CJ HOLBROOK	20-FEB-1996	96100253
SW846-9095	Paint Filter Test	PASS		LD DRYDEN	22-FEB-1996	96170039
TSD553-280	Gross Alpha	<20	pCi/g	JP BREWSTER	1-MAR-1996	96070289
	Gross Beta	<28	pCi/g	JP BREWSTER	1-MAR-1996	96070289
TSD553-385	Technetium	<14.3	pCi/g	JP BREWSTER	1-MAR-1996	96070290
TSD553-440	Cesium-134	<0.1	pCi/g	WC ZUEFLE	1-MAR-1996	96070286
	Cesium-137	<0.1	pCi/g	WC ZUEFLE	1-MAR-1996	96070286
	Cobalt-60	<0.2	pCi/g	WC ZUEFLE	1-MAR-1996	96070286
	Gross Gamma	0.0	pCi/g	WC ZUEFLE	1-MAR-1996	96070286
TSD553-710	% U-235	ND	%	SJ JAMES	22-FEB-1996	96070245
	Alpha Activity	<1	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Americium-241	<0.006	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Neptunium-237	<0.011	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Plutonium-238	<0.003	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Plutonium-239/240	<0.003	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Thorium-228	<0.021	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Thorium-230	<0.028	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Thorium-232	<0.018	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Thorium-234	<0.012	pCi/g	SJ JAMES	22-FEB-1996	96070245
	Uranium	<0.036	pCi/g	SJ JAMES	22-FEB-1996	96070245

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Aluminum	45.87	36.53	79.64
Antimony	45.87	38.33	83.56
Arsenic	45.87	39.19	85.44
Barium	45.87	42.59	92.85
Beryllium	45.87	41.60	90.69
Cadmium	45.87	41.56	90.60
Calcium	45.87	26.32	57.38
Chromium	45.87	25.35	55.26
Cobalt	45.87	41.69	90.89
Copper	45.87	39.04	85.11
Ir	45.87	-53.39	-116.39

Lead	45.87	42.17	91.93
Magnesium	45.87	35.66	77.74
Manganese	45.87	40.98	89.34
Molybde	45.87	39.58	86.29
Nic	45.87	32.87	71.66
Potassium	458.72	447.18	97.48
Selenium	45.87	44.37	96.73
Silver	45.87	42.02	91.61
Sodium	45.87	34.47	75.15
Thallium	45.87	27.32	59.56
Total Cyanide	7.65	2.42	31.63
Vanadium	45.87	39.56	86.24
Zinc	45.87	34.53	75.28

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)
C. J. Van Meter (TCLP Laboratory)

Date Approved: 25-MAR-1996

***** COMMENT PAGE *****

***** 960219-112 *****

' Comments from the Organic Analytical Services *****

SW846-9020A (Proposed SW846-9023)

Sample was extracted using 1:1 acetone/hexane following PORTS method XP4-TS-OA-7020 (Draft). This method extracts 1 g sample using 5mL extraction solvent and 1mL water. The sample undergoes sonication for 15 minutes. This method deviates from proposed method 9023 only in choice of solvent.

Sample VER 31922001 was received by the laboratory in a non-homogeneous matrix consisting of hard plastic pieces and a black granular substance. The result reported is 90% black substance and 10% plastic, due to difficulties in sample preparation of hard plastic.

Sample VER 31922001 was analyzed in QA file 96160311T3. This QA file contained low matrix spike, and low matrix spike duplicate results for sample RFD 32130. However, since all other QC data for QA file 96160311T3 was within limits, the result was not estimated. Sample RFD 32130 was analyzed again in a later QA file.

SW846-8080:

Sample result was not analyzed per Jeff Deemie.

*** Comments from the TCLP Laboratory *****

TCLP_Method 1311/6010A Arsenic was qualified as an estimate due to the
interference check not meeting acceptance limits.

TCLP_Method 1311/8270A : This sample failed to meet established limits for
recovery of the surrogate compounds nitrobenzene-d5
and 2,4,6-Tribromophenol in the MSD and sample
extracts from this matrix. Nitrobenzene was low
recovery while 2,4,6-Tribromophenol was a high
recovery problem. The MS sample exhibited the
same behavior but met established criteria.

The MS and MSD extracts failed to meet established
limits for recovery of nitrobenzene, 2,4-Dinitrotoulene,

and 2,4,6-Trichlorophenol. The first two nitrogen
containing compounds were a low recovery while
2,4,6-Trichlorophenol was a high recovery problem.
These compounds were flagged as estimated sample
quantitation limits.

***** Comments from the Spectrochemistry/ICP Laboratory *****

ACD-5101 Density duplicate result is 0.210 g/mL.

SW846-6010A Ag qualified as estimate due to lab control sample not meeting
Q. C. limits.

SW846-6010A Tl qualified as estimate due to lab control sample and insufficient
number of calibration verifications.

Definition Page for Qualifiers/Flags

960219-112

I - Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
 Correlation coefficient for MSA is less than 0.995.
 The value is between the LC and the LLD.
 The flag "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960219-112
Laboratory: TCLP Laboratory
File ID: 96170041
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER31922001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20229
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 4-MAR-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 15-MAR-1996
QA File Number: 96160315801
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.020U			
108-39-4	m-Cresol✓	0.020U			
106-44-5	4-Methylphenol	0.020U			
87-86-5	Pentachlorophenol	0.040U			
95-95-4	2,4,5-Trichlorophenol	0.020U			
88-06-2	2,4,6-Trichlorophenol	0.020UJ			

ANALYSIS DATA REPORT

AnalIS ID: 960219-112
Laboratory: TCLP Laboratory
File ID: 9617004196170041
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER31922001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20229
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 4-MAR-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 15-MAR-1996
QA File Number: 96160315801
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.040UJ			
118-74-1	Hexachlorobenzene	0.020U			
87-68-3	Hexachlorobutadiene	0.020U			
67-72-1	Hexachloroethane	0.020U			
98-95-3	Nitrobenzene ✓	0.020UJ			
110-86-1	Pyridine ✓	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 960219-112
Laboratory: TCLP Laboratory
File ID: 96170041
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER31922001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20229
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 27-FEB-1996
Analysis Procedure Number: 1311/8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-FEB-1996
QA File Number: 96160229A1
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
71-43-2	Benzene ✓	0.002U			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.013			
67-66-3	Chloroform ✓	0.002U			
106-46-7	1,4-Dichlorobenzene	0.002U			
107-06-2	1,2-Dichloroethane	0.002U			
75-35-4	1,1-Dichloroethene	0.002U			
78-93-3	2-Butanone	0.100U			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.002			
75-01-4	Vinyl Chloride	0.001U			

ANALYSIS DATA REPORT

AnalIS ID: 960219-112
Laboratory: TCLP Laboratory
File ID: 96170041
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER31922001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 20229
Date Sample Received: 19-FEB-1996
Date Sampled: 19-FEB-1996

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 27-FEB-1996
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 4-MAR-1996
QA File Number: 96080234
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.0230J			
7440-39-3	Barium	0.056			
7440-43-9	Cadmium	0.022			
7440-47-3	Chromium	0.088			
7439-92-1	Lead	0.189			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.034			

ANALYSIS DATA REPORT

AnaLIS ID: 960219-112
 Laboratory: TCLP Laboratory
 File ID: 96170041
 Instrument ID:
 Authorized By: C. J. Van Meter

Customer Sample ID: VER31922001
 Customer: ENV RETORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 20229
 Date Sample Received: 19-FEB-1996
 Date Sampled: 19-FEB-1996

TCLP_HG_RPT

Date Extracted/Prepared: 27-FEB-1996
 Analysis Procedure Number: 1311/7470
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 29-FEB-1996
 QA File Number: 96080208
 Dilution Factor: 1.0
 Analyst: LD DRYDEN

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.010U		

Waste Stream Number: 100-2

Waste Stream Title: Printing Solvent Waste

Internal Correspondence

MARTIN MARIETTA ENERGY SYSTEMS, INC.

WST D-
100-2

January 14, 1993
POEF-554-93-22

T. A. Brooks, MS-7550

Toxicity Characteristic Leaching Procedure [TCLP] - X-100 Reproduction Area

A sample of printing pads and solvents from the reproduction area in X-100, RFD-10554 (6-17-92), was submitted for a TCLP test for metals and volatile organics. The test was performed according to Method 1311, as published in the FEDERAL REGISTER and revised June 29, 1990. The Zero Headspace Extractor [ZHE] was used to verify values of volatile organic constituents. Matrix interferences were checked for each parameter and appropriate corrections made, except for tetrachloroethylene. The value for tetrachloroethylene is estimated but is greater than the limit. The value for mercury is for informational purposes only, as analyses were performed after expiration of the holding time. Analyses showed no other concentration of toxicity characteristics exceeded the limits as stated in Table 1 of 40 CFR Part 261.24.

Tentatively identified compounds and LDR compounds were found. These organic compounds and concentration values can be found in POEF-554-92-675, December 17, 1992.



L. E. Deacon, X-710, MS-2215, PORTS (5774)



M. R. Kelley, X-710, MS-2215, PORTS (5774)

LED:MRK:msc

cys:	C. P. Moore	MS-7550
	A. J. Saraceno	MS-2209
	C. W. Skaggs	MS-2234A
	N. J. Smith	MS-2212
	B. E. Upham	MS-7550
	D/554 File - RC	

TABLE 1. ORGANIC ANALYSES OF TCLP EXTRACT
(Units are mg/L.)

	<u>Concentration</u>	<u>Regulatory Limit</u>
VOLATILES		
Benzene	<0.046	0.5
Carbon Tetrachloride	<0.051	0.5
Chlorobenzene	<0.053	100.0
Chloroform	<0.047	6.0
1,4-Dichlorobenzene	<0.062	7.5
1,2-Dichloroethane	<0.051	0.5
1,1-Dichloroethylene	0.058	0.7
Methyl Ethyl Ketone	<2.2	200.0
Tetrachloroethylene	10 E	0.7
Trichloroethylene	<0.052	0.5
Vinyl Chloride	<0.12	0.2

E - Estimated value is uncorrected for matrix interference.

TABLE 2. METALS ANALYSES OF TCLP EXTRACT
(Units are mg/L.)

<u>Sample</u>	<u>Arsenic</u>	<u>Barium</u>	<u>Cadmium</u>	<u>Chromium</u>	<u>Lead</u>	<u>Mercury</u>	<u>Selenium</u>	<u>Silver</u>
LIMIT	5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0
RFD-10554	0.04	0.14	0.01	0.01	0.04	<0.01*	<0.04	<1

* - For informational purposes only, analysis was performed beyond holding time.

00-2

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920106-021 Project: WMG T RFD Customer Sample ID: RFD-1592
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 3-JAN-1992 Date Sample Received: 6-JAN-1992
Sampled By: B KELLEY Date Sample Completed: 28-DEC-1992
Material Description: PRINTING SOLVENTS & PADS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
	Assay (% U-235, Waste)	NA		% U-235	BW SHORT	31-JAN-1992	NA
EC-013	Mercury	NA		mg/L	EL SIMPSON	15-MAY-1992	9208M104
EC-015	Selenium	2.8U*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
EC-016	Silver	.5UN*E		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
EC-040	Cadmium	2.2*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
	Chromium	10.5*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
	Lead	1.5*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
S	Arsenic	1.9U*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
	Barium	19.2*		mg/kg	EL SIMPSON	15-MAY-1992	9208M104
TSD515-500	Uranium (Waste)	<1.0		ug/g	CJ HOLBROOK	9-JAN-1992	92100126
TSD553-340	Technetium (Waste)	<0.4		PCI/G	BJ STANLEY	14-JAN-1992	92070033

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	100	72.6	72.60
BARIUM	100	113.3	113.30
CADMIUM	100	98.	97.80
CHROMIUM	100	105.0	105.00
LEAD	100	97.9	97.90
SELENIUM	100	106.8	106.80
SILVER	100	30.0	30.00
URANIUM (WASTE)	50	53.0	106.07

***** Comments from the Radiochemistry Laboratory *****

Uranium too low for assay determination by gamma

*** Comments from the Organic Analytical Services *****

Chlorobenzene, 1,1,2-Trichloroethane, and Tetrachloroethene coelute.
There was no attempt to separate and identify.

Inorganic Reporting Qualifiers and Flags:

Qualification Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.
- # - Value is between the LC and the LLD.

The "S", "U", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

O. A. Vita (Spectrochemistry/ICP Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

D. E. Boyd (Organic Analytical Services)

Date Approved: 29-DEC-1992

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920106-021
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-1592
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-JAN-1992
Date Sampled: 3-JAN-1992

Solvents_F002

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-FEB-1992
QA File Number: NA
Dilution Factor: 10
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
108-90-7	Chlorobenzene	132J			
	o-Dichlorobenzene	0.40U			
76-13-1	Freon 113	70.3			
75-09-2	Methylene Chloride	0.20U			
127-18-4	Tetrachloroethene	132J			
71-55-6	1,1,1-Trichloroethane	0.20U			
79-00-5	1,1,2-Trichloroethane	132J			
79-01-6	Trichloroethene	0.20U			
75-69-4	Trichlorofluoromethane	0.20U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920106-021
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-1592
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-JAN-1992
Date Sampled: 3-JAN-1992

Solvents_F003

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-FEB-1992
QA File Number: NA
Dilution Factor: 10
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
67-64-1	Acetone	200U			
	n-Butyl alcohol	700U			
108-94-1	Cyclohexanone	100U			
141-78-6	Ethyl Acetate	300U			
	Ethylbenzenes	300U			
60-29-7	Ethyl ether	NR			
67-56-1	Methanol	50U			
	4-Methyl-2-pentanone (MIBK)	100U			
	Xylenes	250U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920106-021
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-1592
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-JAN-1992
Date Sampled: 3-JAN-1992

Solvents_F005

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-FEB-1992
QA File Number: NA
Dilution Factor: 10
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	100U			
	i-Butanol	100U			
	2-Butanone (MEK)	200U			
75-15-0	Carbon Disulfide	NA			
	2-Ethoxy ethanol	200U			
	2-Nitropropane	250U			
110-86-1	Pyridine	200U			
108-88-3	Toluene	100U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

✓

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920620-006 Project: WMGD RFD Customer Sample ID: RFD-10554
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 17-JUN-1992 Date Sample Received: 17-JUN-1992
Sampled By: AR SELBEE Date Sample Completed: 20-JAN-1993
Material Description: PRINTING PADS & SOLVENTS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	Arsenic	0.04		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Barium	0.14		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Cadmium	0.01		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Chromium	0.01		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Lead	0.04		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Mercury	< 0.01R		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Selenium	< 0.04		mg/L	MR KELLEY	23-JUN-1992	RFD-10554
	Silver	< 1		mg/L	MR KELLEY	23-JUN-1992	RFD-10554

***** Comments from the TCLP Laboratory *****

R - T/ lyses was performed after the holding time expired.

Method 8240 - The value for tetrachloroethylene exceeded the linear range of the calibration curve. The result is estimated and uncorrected for matrix spike recovery but is greater than the regulatory limit.

Tentatively identified compounds and LDR compounds were also found. These organic compounds and concentration values can be found in POEF-554-92-675, December 17, 1992.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

Qualify data for the sample as estimated.

Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and repeated analysis.

- N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

U - If data for the sample as estimated.

- Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: D. E. Boyd (TCLP Laboratory)

Approved: 20-JAN-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920620-006
Laboratory: TCLP Laboratory
File ID: RFD-10554
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-10554
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 17-JUN-1992
Date Sampled: 17-JUN-1992

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 23-JUN-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: RFD-10554
Dilution Factor: 1.0
Analyst: LE DEACON

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.046U			
56-23-5	Carbon Tetrachloride	0.051U			
108-90-7	Chlorobenzene	0.053U			
67-66-3	Chloroform	0.047U			
106-46-7	1,4-Dichlorobenzene	0.062U			
107-06-2	1,2-Dichloroethane	0.051U			
75-35-4	1,1-Dichloroethene	0.058			
78-93-3	2-Butanone	2.2 U			
127-18-4	Tetrachloroethene	10			
79-01-6	Trichloroethene	0.052U			
75-01-4	Vinyl Chloride	0.120U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 100-3

Waste Stream Title: Blue Print Solution

PORTS MSDS #: 238

PRODUCT: STANDARD, AMMONIA AS N, 1000PPM N

PART NUMBER: LC-17940-1

FORMULA:

KEYWORD: STANDARD

PORTS NUMBER: 66040995-500

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=000

MANUFACTURER:
LABCHEM INC.
200 WILLIAM PITT WAY
PITTSBURGH
PA

15238
PHONE: 412-826-5230
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 212 F
Melting Point. . . . EQ 32 F
Freezing Point . . . NG
Pour Point NG
Softening Point. . . NG

Specific Gravity . . EQ 1.0
Vapor Pressure . . . EQ 14
Vapor Density. . . . EQ .7
Percent Volatiles. . NG
Evaporation Rate . . LT 1

NOTE: MM HG @ 20'C (H2O).
NOTE: H2O.

pH NA
Molecular Weight . . NG
Viscosity. NG
Solubility in Water. SOLUBLE.

NOTE: ETHER=1.
NOTE: NOT APPLI/NOT AVAIL.

Odor/Appearance/Other Characteristics:
CLEAR COLORLESS LIQUID, ODORLESS.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . N*
Flash Point, Open Cup . . . NG
Fire Point. NG
Auto Ignition. NA
Explosive/Flammable Limits
Lower (LEL). NA
Upper (UEL). NA

NOTE: NON-FLAMMABLE.

NOTE: NOT APPLI/NOT AVAIL.

NOTE: NOT APPLI/NOT AVAIL.
NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG
D.O.T. Hazard Class. . . NG
Label NOT GIVEN
Proper Shipping Name . . NOT GIVEN

=====

Preparer/Contact Information: AL BERANEK 412-826-5230

Date Prepared/Revised 11/26/90

===== Component Information =====

AMMONIUM CHLORIDE

OSHA PEL (PPM): NA
OSHA PEL (MG/M3):
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 10
STEL (PPM):
STEL (MG/M3): 20
Product %: EQ .38
C.A.S. No.: 12125029

Note:

PEL: NOT APPLICABLE OR DATA NOT AVAILABLE / TLV & STEL:

WATER

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 99.6
C.A.S. No.: 7732185

===== IDENTIFICATION =====

PRODUCT NAME: NITROGEN (AMMONIA) STANDARD, 1ml=1ml N = 1.22 mg NH3

Cat # 1794

ATERIAL SAFETY DATA SHEET # 113

REVISED: 11/26/90

CONTACT: Al Beranek

PHONE: (412) 826-5230

MANUFACTURER'S NAME AND ADDRESS:

LABCHEM INC.
200 WILLIAM PITT WAY
PITTSBURGH, PA 15238

===== HAZARDOUS INGREDIENTS/IDENTITY INFORMATION =====

SEE COMPONENT INFORMATION.

NAME: NITROGEN (AMMONIA) STANDARD, 1ml=1mg N = 1.22mg NH3

SYN: Nitrogen reference solution

COMPONENTS:	CAS:	FORMULA/F.WT.
(1) ammonium chloride, 0.38%	12125-02-9	NH4Cl / 53.49
(2) water, 99.6%	7732-18-5	H2O / 18.00

CERCLA RATING(0-3): Health - Fire - Reactivity - Persistence - n/a

TFPA RATING (0-4): Health - Fire - Reactivity - n/a

===== PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

=== FIRE AND EXPLOSION HAZARD DATA ===

FLASH PT.: Non-flammable

EXPLOSION LEVEL:

LOWER (LEL): N/a

UPPER (UEL): N/a

AUTOIGNITION: N/a

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, water spray or foam.

FIREFIGHTING: No acute hazard. Negligible fire hazard when exposed to heat or flame. Move container if possible, avoid breathing dusts or vapors.

===== REACTIVITY DATA =====

STABILITY: Stable under normal temperatures and pressures up to boiling point (212F).

CONDITIONS TO AVOID: Incompatibilities - water reactive substances (oleum, sodium). Ammonium chloride in sufficient concentrations react violently or explosively with bromine trifluoride, iodine heptafluoride, potassium perchlorate, ammonium nitrate.

HAZARDOUS DECOMPOSITION/BYPRODUCTS: This solution presents negligible hazard from thermal decomposition. Ammonium chloride sublimes unchanged at 644F (340C).

HAZARDOUS POLYMERIZATION: Not known to occur.

===== HEALTH HAZARD DATA =====

TOXICITY: No toxic effects anticipated at this concentration of ammonium chloride. Ammonium chloride salt is a mild respiratory and skin irritant, a severe eye irritant.

LDLO: 78 mg/Kg IV-rabbit; 500mg/Kg SubC-mouse.

LD50: 485mg/Kg IP-mouse; 30mg/Kg IM-rat; 1000mg/Kg Oral - rabbit; 1650 mg/Kg Oral-rat.

CARCINOGENICITY: None reported.

EXPOSURE LIMITS: (For ammonium chloride, as fume)

OSHA-PEL: N/a

ACGIH-TWA: 10mg/m3

-STEL: 20mg/m3

TLV CEILING: N/a

IDLH: N/a

OTHER: N/a

ACUTE HEALTH HAZARDS: No health hazards reported for this solution. Ammonium

chloride salts may irritate the nose, throat, mouth and respiratory tract and cause wheezing, chest pain, and delayed pulmonary edema. Skin and eye contact may produce redness and irritation. Ingestion of ammonium salts may produce nausea, vomiting, gastric irritation - over 6 grams may cause systemic ammonia toxicity (heavy breathing, blue skin, dullness/-restlessness, convulsions, coma). Persons with liver or kidney impairment are at increased risk.

CHRONIC HEALTH HAZARDS: Dermatitis, conjunctivitis may occur. Ammonium chloride at this concentration should not present a significant health hazard.

FIRST AID:

INHALATION: Move victim to fresh air, give artificial respiration if necessary. Maintain airway, medical personnel may give oxygen and treat for pulmonary edema. Keep victim warm, at rest. Get medical aid immediately.

SKIN: Remove contaminated clothing, wash area with soap and water. Flush with large amounts of water (15-20min) until chemical is gone. Get medical aid.

EYES: Flush with large amounts of water (15-20min) lifting upper/lower lids occasionally until chemical is gone. Get medical aid at once.

INGESTION: Give conscious victim 2-4 glasses of water, induce vomiting (touch finger to back of throat). Get medical aid at once.

===== PRECAUTIONS FOR SAFE HANDLING AND USE =====

SPILLS OR LEAKS: Absorb with sand, diatomaceous earth, activated charcoal, or other suitable absorbent. Scoop into container and label for disposal. Spill may be chemically neutralized to pH 7.

DISPOSAL: Dispose in accordance with Federal, State, and local laws.

STORAGE AND HANDLING: Store capped in virgin linear polyethylene or equivalent plastic container at room temperature protected from heat and water reactive materials (oleum, sodium).

===== CONTROL MEASURES =====

RESPIRATORY PROTECTION: Not required for laboratory use of this solution. Respirators not required for laboratory.

PROTECTIVE CLOTHING AND EQUIPMENT: Gloves are recommended where repeated and

prolonged contact occurs. Wear splash-proof goggles. Do not wear contact lenses when working with chemicals.

===== SPECIAL NOTES =====

Information in this MSDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc. assumes no liability resulting from the use of this MSDS. The user must determine suitability of this information for his application.

NOTE:

N/A: Means "not applicable" or data "not available".

Waste Stream Number: 100-4

Waste Stream Title: Waste Oil

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F NOTE: 80'C, 760 MM HG.

Melting Point. . . . NG

Freezing Point. . . . EQ 41.9 F NOTE: 5.5'C.

Pour Point. . . . NG

Softening Point. . . . NG

Specific Gravity . . . EQ .879

NOTE: @ 20'C.

Vapor Pressure . . . EQ 74.6

NOTE: MM HG @ 20'C.

Vapor Density. . . . EQ 2.8

Percent Volatiles. . . ~ 100

Evaporation Rate . . . ~ 3

NOTE: BUAC=1.

pH NG

Molecular Weight . . EQ 78.11

Viscosity. NG

Solubility in Water. @ 25C 0.18%.

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 12.2 F NOTE: -11'C, TCC.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 1043.6 F NOTE: 562'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.3

Upper (UEL). EQ 7.1

Shipping Regulations

UN/NA Number. UN1114

D.O.T. Hazard Class. . . FLAMMABLE LIQUID

Label NOT GIVEN

Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

BENZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

HEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

E PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen- (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable

C: Ceiling

PEL: Permissible Exposure Level

STEL: Short Term Exposure Level

TLV: Threshold Limit Value

TWA: Time Weighted Average

BuAc: Butyl Acetate

NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)

OHS: Occupational Health Services ("Hazardline")

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Waste Stream Number: 100-5

Waste Stream Title: Flammable Solvents

APPENDIX A
Page 1 of 5

EXAMPLE OF A GWMP WORK SHEET

Prepared by: BURCH UPHAM Phone #: 2961 Date: 4 / 22 / 96
Waste generation start date: 7 / 1 / 93 Project name: USEC 100-5

A. Waste Origin

1. ☐ Y ☒ N Area (1) has potential for contamination resulting from presence of unencapsulated or unconfined radioactive material or (2) is exposed to sources of particles (neutrons, protons, etc.) capable of causing activation.

B. Project Description

1. Summary of project, including equipment and processes to be used:

ELECTROSTATIC PLOTTER SOLUTIONS

C. Waste Stream Description (including secondary wastes):

1. Summary of waste generation process:

PLOTTER SOLUTION FROM PLOTTER USED IN
ELECTRICAL ENGINEERING

2. Amount of waste generated, including secondary waste:

2 FT³

3. Materials involved in waste generation:

IGNITABLE SOLVENT

4. Material balance or process flow diagram for waste stream(s):

N/A

APPENDIX A
Page 2 of 5

EXAMPLE OF A GWMP WORK SHEET

D. Waste Characterization

Current information is based on:

Analytical results

Process knowledge
(supply documentation)

1. Waste category: RCRA TSCA Radioactive Industrial/sanitary

2. EPA waste codes: D001

3. Chemical composition/contaminant: IGNITABLE SOLVENT BLEND

4. Radionuclides and concentrations: N/A

5. Regulatory agency(ies) having authority: EPA

6. RCRA categories: Ignitable Corrosive TCLP Reactive Listed

7. Physical form: Solid Liquid Gas Sludge

8. Confidence level of info.: High Medium Low

E. Container Information

1. Drums: 30 gal 55 gal 85 gal. Other: 5 gal.

2. Boxes: Metal Concrete Wood Other: _____

Sizes: _____

3. Tank size(s): _____

4. Is waste overpacked?: Yes No

If yes, describe:

5. Other:

APPENDIX A
Page 3 of 5

EXAMPLE OF A GWMP WORK SHEET

F. Waste Stream Management

1. Upon generation, waste stream is:

Stored

Treated

Disposed of

2. Target TSDF (name, location):

PDC

3. Accumulated quantity:

20 m³

lb/k

Other:

4. Summary of treatment, storage, and disposal process:

INCINERATION

5. Summary of WAC for target TSDF:

PROPRIETARY

6. Waste minimization techniques to be implemented:

NONE

☐ Equipment selection

☐ Waste handling (spill control)

☐ Decontamination

☐ Compaction

☐ Material recycling

☐ PPE selection

☐ Solvent substitution

☐ Recovery of cutting fluids

☐ Segregation

☐ Sludge dewatering

☐ Material reuse (solvents, wash waters)

☐ Other :

7. Summary of minimization methods:

APPENDIX A
Page 4 of 5

EXAMPLE OF A GWMP WORK SHEET

G. Waste Storage Area Identification

1. ☒ Area is listed and registered as an RMA.
2. ☒ Area is listed and registered as a RCRA satellite accumulation area.
3. ☒ Area is listed and registered as a RCRA 90-day accumulation area.
4. ☒ Area is listed and registered as a TSCA 30-day storage area.

N/A

H. Additional Comments and Information

N/A

Completed by: Burek Upham

Date completed: 4/22/96

Approved by: _____
(Certification engineer or designee)

Date approved: / /

Approved by: _____
(WMD Training Coordinator or designee)

Date approved: / /



Material Safety Data Sheet

Chemical Product Identity: Toner (pre-mixed)

P/Assembly Part Number: 17278A

Chemical/HP Part Number None

SECTION 1

Manufacturer's Name: HEWLETT PACKARD COMPANY Emergency Telephone Number: (619) 487-4100

Address (Number, Street, City, State, Zip Code) Telephone Number for Information: (619) 487-4100

16399 West Bernardo Drive

Date Prepared: 6/13/90

San Diego, Ca. 92127-1899

SECTION 2 - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))	CAS#	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (Optional)
--	------	----------	-----------	-----------------------------	--------------

Solvent, ISOPAR-G

(predominantly C8-C14

isoparaffinic hydrocarbons)

64742-48-9

* None

> 97%

Polymer & dye stuff

Established

< 3%

National Fire Protection Association (NFPA)

Health Flammability Reactivity

1

2

0

Although no TLV or PEL exists for this family of chemicals, by analogy to similar chemicals and based on the recommendation of a supplier, a 300 ppm occupational exposure limit is suggested.

*Note: See page 3

SECTION 3 - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point 155-176°C (311-348°F)

Specific Gravity (H2O = 1) 0.75 @ 20°C

Vapor Pressure (mm Hg.) < 10mm @ 25°C

Melting Point < -18°C (0°F)

Vapor Density (Air = 1) approx. 5.0

Evaporation Rate (Butyl Acetate = 1) 0.30

Solubility in Water < 0.1%

Appearance and Odor Black liquid; faint petroleum hydrocarbon odor

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) See page 3 Flammable Limits LEL 0.8% UEL 7%

Extinguishing Media Dry chemical, CO2, foam and mist. Water may be ineffective, but should be used to keep fire-exposed containers cool.

Special Fire Fighting Procedures Water not recommended as extinguishing media as it spreads hydrocarbon fires. Minimize breathing gases, vapors, and fumes.

Unusual Fire and Explosion Hazards None, however, it is flammable when exposed to direct flame or excessive temperatures.

DISCLAIMER: This Material Safety Data Sheet is offered without charge to the clients of Hewlett-Packard. Data is the most current available to Hewlett-Packard at the time of preparation and is issued as a matter of information only, no warranty as to its accuracy or completeness is expressed or implied.

SECTION 5 - REACTIVITY DATA

Chemical / HP Part Number None
 Stability { Unstable _____ Conditions to Avoid: N/A
 Stable X
Incompatibility (Materials to Avoid) Strong oxidants (liquid chlorine, Conc. O₂, (Chromic Acid)Hazardous Decomposition or Byproducts None, however, most products of combustion are toxic.

Hazardous { May Occur _____ Conditions to Avoid: _____

Polymerization { Will Not Occur X

SECTION 6 - HEALTH HAZARD DATA

Route(s) of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes
 Health Hazards (Acute and Chronic) Brief periods of high exposure can cause dizziness, irritation of mucous membranes, and drowsiness. Chronic exposure to concentrations below 300 ppm are not currently believed to produce long term adverse effects.
Carcinogenicity: NPT? No IARC Monographs? No OSHA Regulated? No
 Signs and Symptoms of Exposure: Excessive exposure can cause headaches, nausea, and eye irritation. Severe exposure can cause mild depression and/or respiratory irritation and difficulty in breathing. Skin contact can cause drying and chapping. Eye contact can cause irritation of conjunctiva.
 Medical Conditions Generally Aggravated by Exposure: _____

 First Aid Procedures: Ingestion: get medical attention immediately. Do not induce vomiting as it may aspirate into lungs and cause pneumonia-like disorders. Eye and skin contact: See page 3.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in case Material is Released or Spilled: Extinguish ignition sources, provide ventilation, soak up with inert absorbant and place in a flammable waste container.

In certain situations, spill reports may need to be submitted to local authorities.

Waste Disposal Method: Consult state and local authorities for approved waste disposal method. ID Number: UN#1993Precautions to Be Taken in Handling and Storing: Keep container closed, avoid handling near heat, strong lights, sparks, open flames, and strong oxidant.Other Precautions: Avoid breathing vapors and prolonged or repeated skin contact.

SECTION 8 - CONTROL MEASURES

Respiratory Protection (Specify Type) None when used in well-ventilated areas according to directions.
 Ventilation { Local Exhaust No specific requirement Special None
 Mechanical (General) General office ventilation Other None
Protective Gloves For prolonged exposure Neoprene or Nitrile gloves Eye Protection See page 3Other Protective Clothing or Equipment No specific requirement when used according to directions.Work/hygenic practices Avoid breathing vapors, and avoid prolonged skin contact.

SECTION 9 - ADDITIONAL INFORMATIONChemical / HP Part Number None**SECTION: 4 - Fire and Explosion Hazard Data**

Flash Point (method used): 38° C min (100° F) (ASTM D 56, tag closed cup)

SECTION: 6 - Health Hazard Data

First Aid Procedures: Eye contact: Thoroughly flush with water.
Get medical attention.

Skin contact: Wash thoroughly with soap and water.

SECTION: 8 - Control Measures

Eye Protection: Use splash goggles or face shield when eye contact may occur.

Note: MSDS is based on a usage model of 5 liters or less at a given time.
Hazard is predominately controlled by the hydrocarbons (solvent) under the condition of use.

For copies of Hewlett-Packard Material Safety Data Sheets contact:

Hewlett-Packard Company
Corporate Product Regulations
3172 Porter Drive
Palo Alto, CA 94304
(415) 857-8191

HEALTH PHYSICS SURFACE CONTAMINATION SURVEY

Code No. _____

Location X-100 Dept. Head _____ Issue Date _____ Survey Date 5-14-91 Survey Time 1230
 Purpose of Inspection roof and vents (East Wing)

Routine Survey ☐ Pre-maintenance ☐ Off-Plant Shipment ☐ Pre-construction ☐

Routine Follow-Up ☐ Post-maintenance ☐ Surplus and Salvage ☐ Special Survey ☒

Property Number ☐ Details alpha & beta

surface & wipe

Recommendations/Findings (Survey maps, equipment list, and personnel data are attached)

- ☒ All areas monitored were below applicable Plant Allowable Limits _____
- ☒ Decontaminate floor areas above PAL 1000 dpm surface/100 cm² Alpha
- ☒ Decontaminate floor areas above PAL 200 dpm wipe/100 cm²
- ☒ Decontaminate floor areas above PAL 25,000 dpm surface/100 cm² Beta
- ☒ Decontaminate floor areas above PAL 5,000 dpm wipe/100 cm²
- ☐ Decontaminate equipment above Plant Allowable Limits ()

☒ Establish barriers or warning signs, etc., around the area indicating the hazard and the required protection to enter the area until the area is decontaminated and surveyed. (Location) _____

☒ Employ personal protection when working in this area or on this equipment. (Type of Protection) _____

Comments/Summary Results: <400 / <200 dpm / 100 cm² alpha

<6K / <800 dpm / 100 cm² beta

Meters used for survey:

343-8346
228-D223
36994-2406

Walking Surface Index:

Surface N Wipe A Total _____

Equipment Factor:

Surface _____ Wipe _____ Total _____

Surveyor Hamilton / Johnson / Yeeters Approved _____

Code No. _____

Location X-345 Dept. Head CONKEL Issue Date _____ Survey Date 5-7-91 Survey Time 1700
Purpose of Inspection ROOFING MATERIAL

Routine Survey ☐ Pre-maintenance ☐ Off-Plant Shipment ☐ Pre-construction ☐
Routine Follow-Up ☐ Post-maintenance ☐ Surplus and Salvage ☐ Special Survey ☒
Property Number ☐ _____ Details SURFACE AND WIPE

Recommendations/Findings (Survey maps, equipment list, and personnel data are attached)

- ☐ All areas monitored were below applicable Plant Allowable Limits _____
☐ Decontaminate floor areas above PAL 1000 dpm surface/100 cm² Alpha
N/A ☐ Decontaminate floor areas above PAL 200 dpm wipe/100 cm²
25,000 dpm surface/100 cm² Tc-Beta
5,000 dpm wipe/100 cm²
☐ Decontaminate equipment above Plant Allowable Limits ()

NA ☐ Establish barriers or warning signs, etc., around the area indicating the hazard and the required protection to enter the area until the area is decontaminated and surveyed. (Location) _____

☒ Employ personal protection when working in this area or on this equipment. (Type of Protection) SEE ATTACHED A-2428

Comments/Summary MAX. RESULTS: SEE ATTACHED MAP

Meters used for survey:

262-435 440-5862
375-0903 375-5860
578-2274 206-7673
483-1166 339-3425
343-8346

Walking Surface Index:

Surface _____ Wipe _____ Total _____

Equipment Factor:

Surface _____ Wipe _____ Total _____

Surveyor HOALEY, MEENACH, JOHNSON, Approved _____STIFFLER, ESSMAN, HAMILTONLYKINS, TEETERS, WHITE

HEALTH PROTECTION RECOMMENDATIONS

Roofing MATERIAL

Location: X-345 Department Head: CONKEL Survey Date: 5-7-91 Time: 170

Purpose: ☐ Pre-Maintenance ☐ Post-Maintenance ☒ Special

The required health protection for work activities in the area indicated above is marked as a function of work activity and the contamination status as reported on the attached data sheet.

WORK ACTIVITIES	HEAVY WORK GLOVES	CLOTH COVERALLS	PAPER COVERALLS	LATEX GLOVES	TOWEL-NECK	RESPIRATOR AIR - SUPPLIED	RESPIRATOR HALF - FACE	RESPIRATOR FULL - FACE	HEAD COVER	SHOE COVERS NONE
Destruction of Surface (welding, grinding, burning, buffing, drilling, machining)	X	X	X	X	X		X		X	
Airborne Probability Low (Handling, Inspecting)	X	X		X			X			
Airborne Probability Low (Non-handling, Inspecting)										
Airborne Probability High (Impact Tools, Sweeping)	X	X	X	X			X		X	
Wet - Decontamination	X	X	X	X			X			
Dry - Decontamination	X	X	X	X			X		X	

NOTE: Follow Personal Protection Requirements as outlined in procedures when opening system.

NOTE: Thin cotton undertaker gloves are not to be used as anticontamination apparel.

Surveyor: HOLLEY, MEENACH, STIFFLER, ESSMAN,
HAMILTON, LYKINS, TEETERS, WHITE,
JOHANSON

The following Anti-C apparel are required when the Contamination Area boundary becomes active, unless already required as marked above.

☐ Coveralls - 2 pair
(paper or welders)

☐ Head covers

☐ Booties

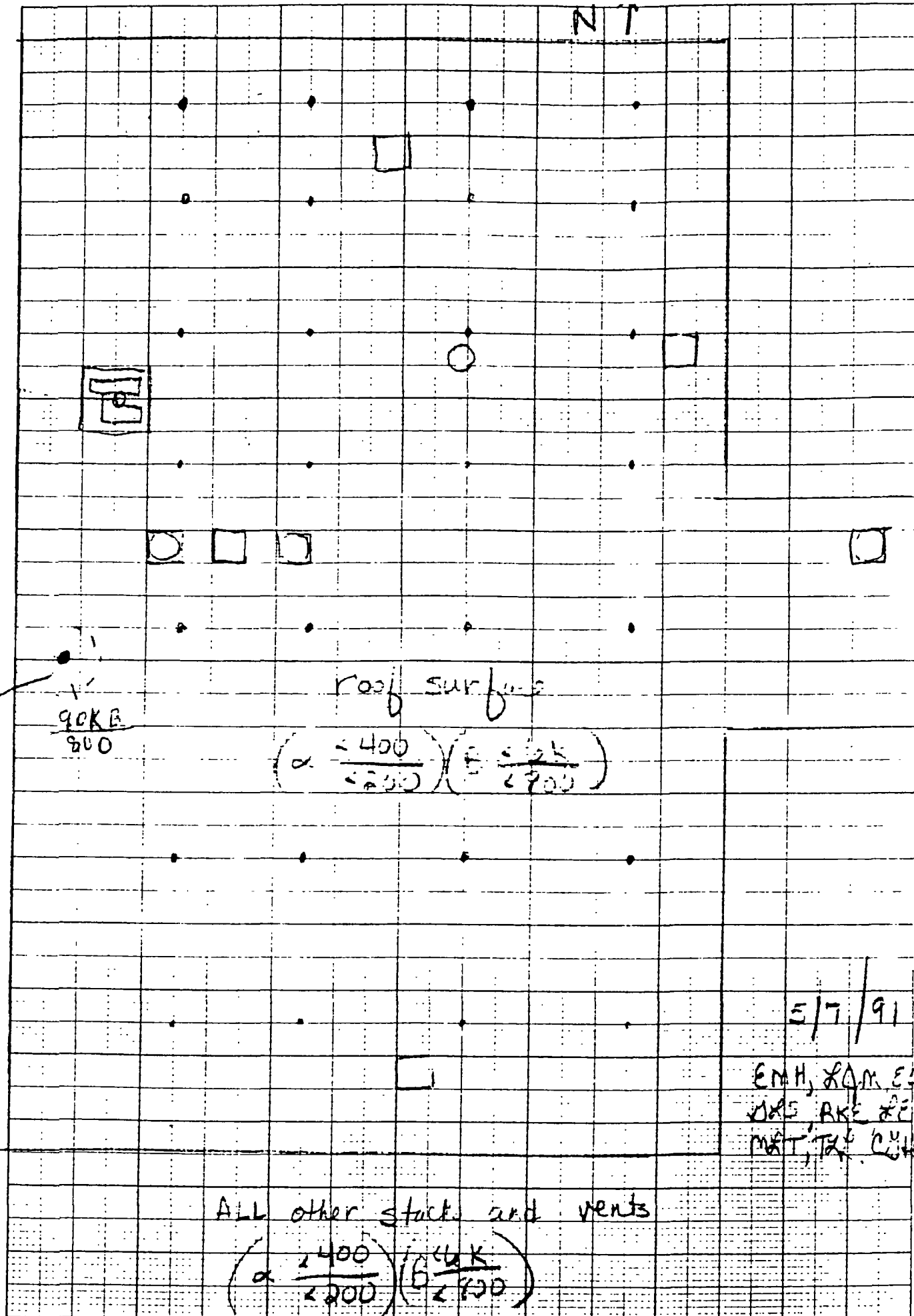
☐ Shoe covers

☐ Gloves - 2 pairs
(inner surgeons and
outer work gloves)

Facility Custodian: _____

461240

K-E 20 X 20 TO THE INCH. FULLY ASSURED WORKING



Waste Stream Number: 100-6

Waste Stream Title: Film/Microfilm

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920904-020 Project: WMGT WML Customer Sample ID: WML-959
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 3-SEP-1992 Date Sample Received: 4-SEP-1992
Sampled By: B KELLEY Date Sample Completed: 14-OCT-1992
Material Description: MICROFILM TONER

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ASTMD3828	Flash Point (Setaflash)	107.6		Deg. F	DK SCAGGS	9-OCT-1992	X

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.
- # - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
 - Not reported.
 - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.

E - Exceeds initial calibration range.

L / Manager: John E. Robensack (Oil & Coal Analysis Laboratory)
Date Approved: 15-OCT-1992

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920224-004 Project: WMGT WMS Customer Sample ID: WMS-743
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 21-FEB-1992 Date Sample Received: 21-FEB-1992
Sampled By: AR SELBEE Date Sample Completed: 29-OCT-1992
Material Description: POLAROID FILM PACK

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	1,1-Dichloroethene	< 0.004		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	1,2-Dichloroethane	0.006		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	1,4-Dichlorobenzene	< 0.004		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Arsenic	< 0.02		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Barium	0.60		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Benzene	< 0.003		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Cadmium	0.14		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Carbon Tetrachloride	< 0.004		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Chlorobenzene	< 0.003		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Chloroform	< 0.004		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Chromium	0.02		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Lead	0.16		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Mercury	< 0.01		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Methy ethyl ketone	6.54*		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Selenium	< 0.30		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Silver	0.22		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Tetrachloroethene	< 0.003		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Trichloroethene	< 0.004		mg/L	MR KELLEY	3-MAR-1992	WMS-743
	Vinyl Chloride	<0.009		mg/L	MR KELLEY	3-MAR-1992	WMS-743

***** Comments from the Chemical Technology Department *****

* - The value for methly ethyl ketone is estimated because the analytical result exceeded the calibration curve.

Laboratory Manager: A. J. Saraceno (Chemical Technology Department)
Date Approved: 30-OCT-1992

AnalIS ID: 920224-004
Laboratory: Chemical Technology Department
File ID: WMS-743
Instrument ID:
Authorized By: A. J. Saraceno

Customer Sample ID: WMS-743
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 21-FEB-1992
Date Sampled: 21-FEB-1992

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 3-MAR-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-743
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.182U			
108-39-4	m-Cresol	0.047U			
106-44-5	4-Methylphenol	0.182U			
87-86-5	Pentachlorophenol	0.028			
95-95-4	2,4,5-Trichlorophenol	0.059U			
88-06-2	2,4,6-Trichlorophenol	0.065U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

AnalIS ID: 920224-004
Laboratory: Chemical Technology Department
File ID: WMS-743
Instrument ID:
Authorized By: A. J. Saraceno

Customer Sample ID: WMS-743
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 21-FEB-1992
Date Sampled: 21-FEB-1992

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 3-MAR-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-743
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.020U			
118-74-1	Hexachlorobenzene	0.042U			
87-68-3	Hexachlorobutadiene	0.024U			
67-72-1	Hexachloroethane	0.021U			
98-95-3	Nitrobenzene	0.020U			
110-86-1	Pyridine	0.032U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: U100-7

Waste Stream Title: Spent Photoreceptors

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950912-060 Project: WMGD PDCE Requisition Number: 017747
Customer Sample ID: RFD32426 Customer: ENV./WASTE MGT.
Date Sampled: 29-AUG-1995 13:40 Date Sample Received: 30-AUG-1995
Sampled By: MB HAMEL Date Sample Completed: 10-OCT-1995
Material Description: XT847 PHOTORECEPTERS

** See comment page for comments. **
** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	12-SEP-1995	95080945
1311/3520	Sample Prep TCLP Pesticides	COMPLETE			MR KELLEY	5-OCT-1995	95161005P3
	Sample Prep TCLP Semi-Volatile	COMPLETE			RK POWELL	13-SEP-1995	95160258
1311/6010A	Arsenic	0.056U		mg/L	MR KELLEY	11-SEP-1995	95170185
	Barium	0.084		mg/L	MR KELLEY	11-SEP-1995	95170185
	Cadmium	0.003U		mg/L	MR KELLEY	11-SEP-1995	95170185
	Chromium	0.019		mg/L	MR KELLEY	11-SEP-1995	95170185
	Lead	1.35		mg/L	MR KELLEY	11-SEP-1995	95170185
	Selenium	0.087		mg/L	MR KELLEY	11-SEP-1995	95170185
0	Mercury	0.010U		mg/L	MR KELLEY	11-SEP-1995	95170185
1311/7760A	Silver	0.120		mg/L	MR KELLEY	11-SEP-1995	95170185
EOX	Extractable Organic Halogen	82.5		ug/g	DE COLLINS	13-SEP-1995	95160913T3
OA760-345-01	Bulk Density	0.2620		g/mL	D PEREZ	28-SEP-1995	95081007
SM-2540G	% Solids	99.95		%	SK BENNINGTON	27-SEP-1995	95101341
SW-846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	11-SEP-1995	95170185
SW846-1010	Flash Point	NA			D PEREZ	14-SEP-1995	NA
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	11-SEP-1995	95170185
SW846-3050	Sample Prep Metals	COMPLETE			TE SHOOK	14-SEP-1995	091495-044
SW846-6010A	Arsenic	209U		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Barium	3.4U*		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Cadmium	10.8U*		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Chromium	188000N*		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Lead	123		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Selenium	591		mg/kg	TE SHOOK	14-SEP-1995	95080942
	Silver	71.0U		mg/kg	TE SHOOK	14-SEP-1995	95080942
9045	pH	5.92		PH	BJ STANLEY	1-SEP-1995	95101215

Spill Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Extractable Organic Halogen	243.9	242.3	99.34

Laboratory Manager: D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)
C. J. Van Meter (TCLP Laboratory)

Date Approved: 10-OCT-1995

***** COMMENT PAGE *****
***** 950912-060 *****

**** Comments from the Organic Analytical Services ****

846-9020A (Proposed SW846-9023)

Sample was extracted using 1:1 acetone/hexane following PORTS method XP4-TS-OA-7020 (Draft). This method extracts 1 g sample with 5 mL extraction solvent and 1 mL water. The sample is then sonicated for 15 minutes to complete extraction. This method deviates from proposed method 9023 only in choice of solvent.

Sample spike duplicate results

Result	Amount spiked	Spike result	% Recovered
82.5	243.9	265.6	75.1

***** Comments from the Spectrochemistry/ICP Laboratory *****

OA760-345-01 Density duplicate result is 0.2660 g/mL

Sample matrix is photoreceptors, which is not a suitable matrix for SW846-1010 Ignitability.

***** Comments from the TCLP Laboratory *****

TCLP Method 1311/8270A : This sample failed method criteria for recovery of 2,4-Dinitrotoluene in the matrix spike and the matrix spike duplicate.

Definition Page for Qualifiers/Flags

950912-060

**** *****

Organic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnaLIS ID: 950912-060
 Laboratory: TCLP Laboratory
 File ID: 95170185
 Instrument ID:
 Authorized By: C. J. Van Meter

Customer Sample ID: RFD32426
 Customer: ENV./WASTE MGT.
 Sample Matrix: SOLID WASTE
 Requisition Number: 017747
 Date Sample Received: 30-AUG-1995
 Date Sampled: 29-AUG-1995

TCLP_HERBICIDES_RPT

Date Extracted/Prepared: 11-SEP-1995
 Analysis Procedure Number:
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed:
 QA File Number: 95170185
 Dilution Factor: 1.0
 Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
94-75-7	2,4-D	0.005U			
93-72-1	2,4,5-TP (Silvex)	0.005U			

ANALYSIS DATA REPORT

AnalIS ID: 950912-060
Laboratory: TCLP Laboratory
File ID: 95170185
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD32426
Customer: ENV./WASTE MGT.
Sample Matrix: SOLID WASTE
Requisition Number: 017747
Date Sample Received: 30-AUG-1995
Date Sampled: 29-AUG-1995

TCLP_PESTICIDES_RPT

Date Extracted/Prepared: 11-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170185
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
57-74-9	Technical Chlordane	0.001U			
72-20-8	Endrin	0.001U			
76-44-8	Heptachlor	0.001U			
1024-57-3	Heptachlor epoxide	0.001U			
58-89-9	gamma-BHC(Lindane)	0.001U			
72-43-5	Methoxychlor	0.001U			
8001-35-2	Toxaphene	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 950912-060
Laboratory: TCLP Laboratory
File ID: 95170185
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD32426
Customer: ENV./WASTE MGT.
Sample Matrix: SOLID WASTE
Requisition Number: 017747
Date Sample Received: 30-AUG-1995
Date Sampled: 29-AUG-1995

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 11-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170185
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.020U			
108-39-4	m-Cresol	0.020U			
106-44-5	4-Methylphenol	0.020U			
87-86-5	Pentachlorophenol	0.040U			
95-95-4	2,4,5-Trichlorophenol	0.020U			
88-06-2	2,4,6-Trichlorophenol	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 950912-060
Laboratory: TCLP Laboratory
File ID: 95170185
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD32426
Customer: ENV./WASTE MGT.
Sample Matrix: SOLID WASTE
Requisition Number: 017747
Date Sample Received: 30-AUG-1995
Date Sampled: 29-AUG-1995

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 11-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170185
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.040U			
118-74-1	Hexachlorobenzene	0.020U			
87-68-3	Hexachlorobutadiene	0.020U			
67-72-1	Hexachloroethane	0.020U			
98-95-3	Nitrobenzene	0.020U			
110-86-1	Pyridine	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 950912-060
Laboratory: TCLP Laboratory
File ID: 95170185
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD32426
Customer: ENV./WASTE MGT.
Sample Matrix: SOLID WASTE
Requisition Number: 017747
Date Sample Received: 30-AUG-1995
Date Sampled: 29-AUG-1995

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 11-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170185
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.002U			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.016			
67-66-3	Chloroform	0.002U			
106-46-7	1,4-Dichlorobenzene	0.002U			
107-06-2	1,2-Dichloroethane	0.002U			
75-35-4	1,1-Dichloroethene	0.002U			
78-93-3	2-Butanone	0.100JU			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.002U			
75-01-4	Vinyl Chloride	0.001U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

TCLP_VOLATILES_RPT ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950912-060
Laboratory: TCLP Laboratory
Sample Matrix: SOLID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: RFD32426
Customer: ENV./WASTE MGT.
File ID: 95170185
Date Received: 30-AUG-1995
Date Analyzed: _____
Concentration Units: mg/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 71-55-6	1,1,1-Trichloroethane	9.5	0.006	
2. 100-42-5	Styrene	16.5	0.002	
3.				
4.				
5.				
6.				
7.				
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100-1

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

Analysis ID: 930602-018 Project: WMT WMS Requisition Number: 001217
Customer Sample ID: WMS960 Customer: WASTE MANAGEMENT
Date Sampled: 2-JUN-1993 10:00 Date Sample Received: 2-JUN-1993
Sampled By: BK KELLEY Date Sample Completed: 30-JUN-1993
Material Description: PHOTORECEPTOR TUBES X100

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
311	Arsenic	0.16U		mg/L	MR KELLEY	3-JUN-1993	93160273
	Barium	0.13		mg/L	MR KELLEY	3-JUN-1993	93160273
	Cadmium	0.02U		mg/L	MR KELLEY	3-JUN-1993	93160273
	Chromium	0.05U		mg/L	MR KELLEY	3-JUN-1993	93160273
	Lead	5.7		mg/L	MR KELLEY	3-JUN-1993	93160273
	Mercury	0.02U		mg/L	MR KELLEY	3-JUN-1993	93160273
	Selenium	0.29U		mg/L	MR KELLEY	3-JUN-1993	93160273
	Silver	0.02U		mg/L	MR KELLEY	3-JUN-1993	93160273

***** Comments from the TCLP Laboratory *****

sd 1311 : The results are corrected for matrix spike recovery.

Lead exceeded the regulatory limit of 5.0 mg/L.

Post-It™ brand fax transmittal memo 7671

of pages = 6

To	PLD	From	Sammi
Co.		Co.	
Dept.		Phone #	
Fax #		Fax #	

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- W - Qualify data for the sample as estimated.

Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

ANALIS ID: 950504-119 Project: WMG T WMS Requisition Number: 016835
 Customer Sample ID: WMS1348 Customer: ENV./WASTE MGT.
 Date Sampled: 4-MAY-1995 13:35 Date Sample Received: 4-MAY-1995
 Sampled By: TW BARR Date Sample Completed: 16-JUN-1995
 Material Description: X847 CANON PHOTORECEPTORS

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/6010A	Arsenic	0.056U		mg/L	MR KELLEY	26-MAY-1995	95170082
	Barium	0.070		mg/L	MR KELLEY	26-MAY-1995	95170082
	Cadmium	0.031		mg/L	MR KELLEY	26-MAY-1995	95170082
	Chromium	0.002U		mg/L	MR KELLEY	26-MAY-1995	95170082
	Lead	0.022U		mg/L	MR KELLEY	26-MAY-1995	95170082
	Selenium	0.076U		mg/L	MR KELLEY	26-MAY-1995	95170082
	Silver	0.080N		mg/L	MR KELLEY	26-MAY-1995	95170082
1311/7470	Mercury	0.010U		mg/L	MR KELLEY	26-MAY-1995	95170082

Laboratory Manager: J.J. Williams (TCLP Laboratory)
 Date Approved: 16-JUN-1995

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

ANALIS ID: 950504-118 Project: WMTG WMS Requisition Number: 016835
 Customer Sample ID: WMS1347 Customer: ENV./WASTE MGT.
 Date Sampled: 4-MAY-1995 13:15 Date Sample Received: 4-MAY-1995
 Sampled By: TW BARR Date Sample Completed: 18-JUN-1995
 Material Description: X847 LANIER PHOTORECEPTORS

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/6010A	Arsenic	0.122		mg/L	MR KELLEY	31-MAY-1995	95170087
	Barium	1.15		mg/L	MR KELLEY	31-MAY-1995	95170087
	Cadmium	0.928		mg/L	MR KELLEY	31-MAY-1995	95170087
	Chromium	0.008		mg/L	MR KELLEY	31-MAY-1995	95170087
	Lead	8.46		mg/L	MR KELLEY	31-MAY-1995	95170087
	Selenium	0.076U		mg/L	MR KELLEY	31-MAY-1995	95170087
	Silver	0.040U		mg/L	MR KELLEY	31-MAY-1995	95170087
1311/7470	Mercury	0.010U		mg/L	MR KELLEY	31-MAY-1995	95170087

Laboratory Manager: J.J. Williams (TCLP Laboratory)
 Date Approved: 19-JUN-1995

Waste Stream Number: U100-9

Waste Stream Title: Silver Recovery Cartridges

PORTS MSDS #: 6215

PRODUCT: SILVER

PART NUMBER:

FORMULA: AG

KEYWORD: METAL

PORTS NUMBER: 66-019-1495

PORTS MISC INFO:

PORTS RATING: HFR=400

MANUFACTURER:
ENGELHARD-CLAL LP
700 BLAIR ROAD
CARTERET
NJ

07008
PHONE: 908-205-5720
EMERGENCY PHONE: 800-424-9300

===== Physical/Chemical Characteristics =====

Boiling Point	EQ 3852 F	NOTE: 2122'C.
Melting Point	EQ 1764 F	NOTE: 962'C.
Freezing Point	NG	
Pour Point	NG	
Softening Point	NG	
Specific Gravity	EQ 10.53	
Vapor Pressure	NA	NOTE: NOT APPLICABLE.
Vapor Density	NA	NOTE: NOT APPLICABLE.
Percent Volatiles	NG	
Evaporation Rate	NA	NOTE: NOT APPLICABLE.
pH	ND	NOTE: NOT DETERMINED.
Molecular Weight	NG	
Viscosity	NG	
Solubility in Water	INSOLUBLE.	
Odor/Appearance/Other Characteristics:		
WHITE DUCTILE METAL, ODORLESS.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup	NA	NOTE: NOT APPLICABLE.
Flash Point, Open Cup	NA	NOTE: NOT APPLICABLE.
Fire Point	NG	
Auto Ignition	NA	NOTE: NOT APPLICABLE.
Explosive/Flammable Limits		
Lower (LEL)	NA	NOTE: NOT APPLICABLE.
Upper (UEL)	NA	NOTE: NOT APPLICABLE.

Shipping Regulations

UN/NA Number	NR
D.O.T. Hazard Class	NOT REGULATED
Label	NOT GIVEN
Proper Shipping Name	NOT GIVEN

Preparer/Contact Information: CORPORATE ENVIRONMENT, HEALTH & SAFETY GROUP

Date Prepared/Revised 3/22/93

===== Component Information =====

SILVER
OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.01
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 00.1
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: 7440224

===== SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

PRODUCT: SILVER

COMMON NAME: SILVER

CHEMICAL NAME: SILVER

FORMULA: Ag

PRODUCT CAS NO.: 7440-22-4

PRODUCT USE:

CODE: A-2006

PRINTED: 20 JUL 1995

DATE: 22 MAR 1993

PHONE:

1-908-205-5720 (Customer Service)
1-908-205-5700 (24-Hour Emergency)

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):

1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-202-483-7616 (Outside Above Area)

SUPPLIER'S NAME AND ADDRESS:

ENGELHARD-CLAL LP
700 BLAIR ROAD
CARTERET, NJ 07008

===== SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

NOTE: See Section VIII for Exposure Limits and Section XI for Toxicological Information.

===== SECTION 3: HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW:

White ductile metal
Odorless

FLASH POINT: Not Applicable

May cause eye, skin and respiratory tract irritation.

Prolonged or repeated contact may result in argyria (discoloration) of the eyes, skin, respiratory tract or other mucous membranes.

May cause eye and skin irritation.

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions.

Toxic metal fumes may be released in a fire situation.

ROUTES OF ENTRY:

EYES: YES
SKIN: YES
INHALATION: YES
INGESTION: YES

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause irritation.
SKIN CONTACT: May cause irritation.
INHALATION: May cause irritation if exposure is prolonged or excessive.
INGESTION: No adverse effects expected. Ingestion of large amounts may be harmful.

NOTE: Health effects only apply if dust or fume is formed.

CARCINOGENICITY:

NTP: NO
IARC: NO
OSHA: NO

CHRONIC HEALTH HAZARDS: The absorption of SILVER compounds into the circulation and the subsequent deposition of reduced silver in various tissues of the body may result in the production of a generalized greyish pigmentation of the skin and mucous membrane (argyria). Generalized argyria develops after 2 to 25 years of exposure. There are no systemic effects or symptoms and no physical disability. Once deposited, there is no known means by which this silver can be eliminated; the pigmentation is permanent.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known.

NOTE: See Section VIII for Exposure Limits, Section XI for Toxicological Information and Section XII for Ecological Information.

===== SECTION 4: FIRST AID MEASURES =====

EYE CONTACT: Flush eyes with plenty of water. If irritation develops, call a physician.

SKIN CONTACT: Immediately wash skin with soap and plenty of water. If irritation persists, call a physician.

INHALATION: Remove to fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician.

INGESTION: Procedures normally not needed. If large quantities are ingested, seek medical advice.

===== SECTION 5: FIRE-FIGHTING MEASURES =====

FLASH POINT: Not Applicable

AUTO-IGNITION: Not Applicable

LEL: Not Applicable

UL: Not Applicable

...EPA HAZARD CLASSIFICATION:

HEALTH: 1
FLAMMABLE: 0
REACTIVITY: 0
SPECIAL: 0

HMIS HAZARD CLASSIFICATION:

HEALTH: 1*
FLAMMABLE: 0
REACTIVITY: 0
SPECIAL: 0

*Indicates the possibility of chronic health effects. See Chronic Health Hazards in Section III for more information.

EXTINGUISHING MEDIA: Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

==== SECTION 6: ACCIDENTAL RELEASE MEASURES =====

Contain spillage and scoop up or vacuum. Avoid dusting. Notification of the National Response Center (800/424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (see Section XI: Disposal Considerations).

NOTE: In the event of an accidental release of this material, the above procedures should be followed. Additionally proper exposure controls and personal protection equipment should be used (see Section VIII - Exposure Control/Personal Protection) and disposal of the material should be in accordance with Section XI - Disposal Considerations.

===== SECTION 7: HANDLING AND STORAGE =====

Wash thoroughly after handling.
Keep container closed.
Keep away from heat, sparks and flame.
Store in a cool, dry location away from incompatible materials.
Avoid contact with eyes, skin and clothing.
Avoid breathing any dust, mist or fumes resulting from the use of this product.

Minimize dust generation and exposure.
Use only with adequate ventilation.
Do not eat, drink, or smoke in work area.

===== SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION =====

EXPOSURE LIMITS:

INGREDIENT	PEL-OSHA	TLV-ACGIH
SILVER		
CAS NO.: 7440-22-4	0.01 mg/m3	0.1 mg/m3

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 1994-95 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989*.

*NOTE: As a result of the July 7, 1992 decision by the U.S. Circuit Court of Appeals (AFL-CIO v. OSHA) to vacate the 1989 PELs, OSHA will no longer enforce these new limits and will return to the pre-1989 PELs. Engelhard, however, will continue to list the more protective 1989 levels.

NOTE: The hazards of all ingredients of this product are not known, however exposure is not expected as the product is in solid form. The threshold limit values (TLVs) and potential health effects statements are listed for ingredients of the product for which data is available. However, these statements may not be applicable as the ingredients are in solid form. If dust, powder, or fume is generated then TLVs and effects of overexposure statements will be applicable.

RESPIRATORY PROTECTION: A NIOSH/MSHA approved dust respirator is recommended if dust is generated.

VENTILATION: General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

PROTECTIVE EQUIPMENT:

Safety glasses (with side shields).
Gloves.
Body protection as necessary to prevent skin contact.

PERSONNEL SAMPLING PROCEDURE:

FOR METALLIC COMPONENTS: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7300.

===== SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== SECTION 10: STABILITY AND REACTIVITY =====

STABILITY: Generally considered stable.

AVOID: None expected.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids and bases, acetylene, ammonia, and hydrogen peroxide.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.

POLYMERIZATION: Polymerization is not expected to occur.

AVOID: Not applicable.

===== SECTION 11: TOXICOLOGICAL INFORMATION =====

CHEMICAL NAME	% WT. LD50	LC50
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SILVER

\S NO.: 7440-22-4

100 Not Available

Not Available

NOTE: See Sections III, VIII and XII for additional information.

===== SECTION 12: ECOLOGICAL INFORMATION =====

ECOTOXICITY: No data available.

ENVIRONMENTAL FATE: No data available.

===== SECTION 13: DISPOSAL CONSIDERATIONS =====

US EPA WASTE NUMBER: D011

This product contains SILVER or silver compounds and disposal may be regulated under EPA hazardous waste regulations, waste number D011. Before disposal, this product or mixtures containing this product should be tested for toxicity characteristics (TC) under the current EPA Hazardous Waste Regulations TCLP testing procedures, 40 CFR Part 261 et seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

NOTE: Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

===== SECTION 14: TRANSPORT INFORMATION =====

INTERNATIONAL:

UN NUMBER: Not Regulated

UNITED STATES:

EPA WASTE NUMBER: D011

DOT CLASSIFICATION: Not Regulated

CANADA:

PIN NUMBER: Not Regulated

TDG CLASS: Not Regulated

EC:

DGL: Not Determined

===== SECTION 15: REGULATORY INFORMATION =====

US FEDERAL REGULATIONS:

TSCA: IN TSCA

SARA 311 AND 312 HAZARD CATEGORIES:

IMMEDIATE (ACUTE) HEALTH HAZARD: YES

DELAYED (CHRONIC) HEALTH HAZARD: YES

FIRE HAZARD: NO

REACTIVITY HAZARD: NO

SUDDEN RELEASE OF PRESSURE: NO

SARA SECTION 313 NOTIFICATION: This product contains a toxic chemical (or chemicals) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 172.

CHEMICAL NAME	GAS NUMBER	% WT.
SILVER	7440-22-4	100

OZONE DEPLETING SUBSTANCES (ODS): This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC): None

US STATE REGULATIONS:

VOLATILE ORGANIC COMPOUND (CARB): Not Determined

CANADIAN REGULATIONS:

DSL/NDSL: Not Determined

WHMIS CLASSIFICATION: Not Determined

EUROPEAN REGULATIONS:

EINECS: Not Determined

OTHER REGULATIONS:

MITI: Not Determined

AICS: Not Determined

===== SECTION 16: OTHER INFORMATION =====

REVISIONS:

REVISION NUMBER: 3

THIS MSDS HAS BEEN REVISED IN THE FOLLOWING SECTION(S):

SECTION IV: FIRST AID MEASURES

SECTION V: FIRE-FIGHTING MEASURES

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

PREPARATION INFORMATION:

PREPARED BY: Corporate Environment, Health & Safety Group

PHONE NUMBER: See Section I

The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling this product. The information presented in the MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section I to make certain that this sheet is current.

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Waste Stream Number: 101-2

Waste Stream Title: Silver Solution and Related Materials

PORTS MSDS #: 6215

PRODUCT: SILVER

PART NUMBER:

FORMULA: AG

KEYWORD: METAL

PORTS NUMBER: 66-019-1495

PORTS MISC INFO:

PORTS RATING: HFR=400

MANUFACTURER:
ENGELHARD-CLAL LP
700 BLAIR ROAD
CARTERET
NJ

07008

PHONE: PHONE: 908-205-5720

EMERGENCY PHONE: 800-424-9300

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 3852 F
Melting Point. . . . EQ 1764 F
Freezing Point. . . . NG
Pour Point. . . . NG
Softening Point. . . NG

NOTE: 2122'C.

NOTE: 962'C.

Specific Gravity . . EQ 10.53
Vapor Pressure . . . NA
Vapor Density. . . . NA
Percent Volatiles. . NG
Evaporation Rate . . NA
pH ND
Molecular Weight . . NG
Viscosity. NG
Solubility in Water. INSOLUBLE.
Odor/Appearance/Other Characteristics:
WHITE DUCTILE METAL, ODORLESS.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: NOT DETERMINED.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA
Flash Point, Open Cup . . . NA
Fire Point. NG
Auto Ignition. NA
Explosive/Flammable Limits
Lower (LEL). NA
Upper (UEL). NA

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

Shipping Regulations

UN/NA Number. NR
D.O.T. Hazard Class. . . NOT REGULATED
Label NOT GIVEN
Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: CORPORATE ENVIRONMENT, HEALTH & SAFETY GROUP

Date Prepared/Revised 3/22/93

==== Component Information =====

LVER
OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.01
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 00.1
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: 7440224

==== SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

PRODUCT: SILVER

COMMON NAME: SILVER

CHEMICAL NAME: SILVER

FORMULA: Ag

PRODUCT CAS NO.: 7440-22-4

PRODUCT USE:

CODE: A-2006

PRINTED: 20 JUL 1995

DATE: 22 MAR 1993

HONE:

1-908-205-5720 (Customer Service)
1-908-205-5700 (24-Hour Emergency)

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):

1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-202-483-7616 (Outside Above Area)

SUPPLIER'S NAME AND ADDRESS:

ENGELHARD-CLAL LP
700 BLAIR ROAD
CARTERET, NJ 07008

==== SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

NOTE: See Section VIII for Exposure Limits and Section XI for Toxicological Information.

==== SECTION 3: HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW:

White ductile metal
Odorless

FLASH POINT: Not Applicable

May cause eye, skin and respiratory tract irritation.

Prolonged or repeated contact may result in argyria (discoloration) of the eyes, skin, respiratory tract or other mucous membranes.

May cause eye and skin irritation.

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions.

Toxic metal fumes may be released in a fire situation.

ROUTES OF ENTRY:

EYES: YES
SKIN: YES
INHALATION: YES
INGESTION: YES

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause irritation.
SKIN CONTACT: May cause irritation.
INHALATION: May cause irritation if exposure is prolonged or excessive.
INGESTION: No adverse effects expected. Ingestion of large amounts may be harmful.

NOTE: Health effects only apply if dust or fume is formed.

CARCINOGENICITY:

NTP: NO
IARC: NO
OSHA: NO

CHRONIC HEALTH HAZARDS: The absorption of SILVER compounds into the circulation and the subsequent deposition of reduced silver in various tissues of the body may result in the production of a generalized greyish pigmentation of the skin and mucous membrane (argyria). Generalized argyria develops after 2 to 25 years of exposure. There are no systemic effects or symptoms and no physical disability. Once deposited, there is no known means by which this silver can be eliminated; the pigmentation is permanent.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known.

NOTE: See Section VIII for Exposure Limits, Section XI for Toxicological Information and Section XII for Ecological Information.

===== SECTION 4: FIRST AID MEASURES =====

EYE CONTACT: Flush eyes with plenty of water. If irritation develops, call a physician.

SKIN CONTACT: Immediately wash skin with soap and plenty of water. If irritation persists, call a physician.

INHALATION: Remove to fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician.

INGESTION: Procedures normally not needed. If large quantities are ingested, seek medical advice.

===== SECTION 5: FIRE-FIGHTING MEASURES =====

FLASH POINT: Not Applicable

AUTO-IGNITION: Not Applicable

LEL: Not Applicable

U: Not Applicable

NFPA HAZARD CLASSIFICATION:

HEALTH: 1
FLAMMABLE: 0
REACTIVITY: 0
SPECIAL: 0

HMS HAZARD CLASSIFICATION:

HEALTH: 1*
FLAMMABLE: 0
REACTIVITY: 0
SPECIAL: 0

*Indicates the possibility of chronic health effects. See Chronic Health Hazards in Section III for more information.

EXTINGUISHING MEDIA: Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

===== SECTION 6: ACCIDENTAL RELEASE MEASURES =====

Contain spillage and scoop up or vacuum. Avoid dusting. Notification of the National Response Center (800/424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (see Section XI: Disposal Considerations).

NOTE: In the event of an accidental release of this material, the above procedures should be followed. Additionally proper exposure controls and personal protection equipment should be used (see Section VIII - Exposure Control/Personal Protection) and disposal of the material should be in accordance with Section XI - Disposal Considerations.

===== SECTION 7: HANDLING AND STORAGE =====

Wash thoroughly after handling.
Keep container closed.
Keep away from heat, sparks and flame.
Store in a cool, dry location away from incompatible materials.
Avoid contact with eyes, skin and clothing.
Avoid breathing any dust, mist or fumes resulting from the use of this product.

Minimize dust generation and exposure.
Use only with adequate ventilation.
Do not eat, drink, or smoke in work area.

===== SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION =====

EXPOSURE LIMITS:

INGREDIENT	PEL-OSHA	TLV-ACGIH
SILVER		
CAS NO.: 7440-22-4	0.01 mg/m3	0.1 mg/m3

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 1994-95 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989*.

*NOTE: As a result of the July 7, 1992 decision by the U.S. Circuit Court of Appeals (AFL-CIO v. OSHA) to vacate the 1989 PELs, OSHA will no longer enforce these new limits and will return to the pre-1989 PELs. Engelhard, however, will continue to list the more protective 1989 levels.

NOTE: The hazards of all ingredients of this product are not known, however exposure is not expected as the product is in solid form. The threshold limit values (TLVs) and potential health effects statements are listed for ingredients of the product for which data is available. However, these statements may not be applicable as the ingredients are in solid form. If dust, powder, or fume is generated then TLVs and effects of overexposure statements will be applicable.

RESPIRATORY PROTECTION: A NIOSH/MSHA approved dust respirator is recommended if dust is generated.

VENTILATION: General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

PROTECTIVE EQUIPMENT:

Safety glasses (with side shields).
Gloves.
Body protection as necessary to prevent skin contact.

PERSONNEL SAMPLING PROCEDURE:

FOR METALLIC COMPONENTS: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7300.

===== SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== SECTION 10: STABILITY AND REACTIVITY =====

STABILITY: Generally considered stable.

AVOID: None expected.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids and bases, acetylene, ammonia, and hydrogen peroxide.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.

POLYMERIZATION: Polymerization is not expected to occur.

AVOID: Not applicable.

===== SECTION 11: TOXICOLOGICAL INFORMATION =====

CHEMICAL NAME	% WT. LD50	LC50
---------------	------------	------

SILVER

S NO.: 7440-22-4

100 Not Available

Not Available

NOTE: See Sections III, VIII and XII for additional information.

===== SECTION 12: ECOLOGICAL INFORMATION =====

ECOTOXICITY: No data available.

ENVIRONMENTAL FATE: No data available.

===== SECTION 13: DISPOSAL CONSIDERATIONS =====

US EPA WASTE NUMBER: D011

This product contains SILVER or silver compounds and disposal may be regulated under EPA hazardous waste regulations, waste number D011. Before disposal, this product or mixtures containing this product should be tested for toxicity characteristics (TC) under the current EPA Hazardous Waste Regulations TCLP testing procedures, 40 CFR Part 261 et seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

NOTE: Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

===== SECTION 14: TRANSPORT INFORMATION =====

INTERNATIONAL:

UN NUMBER: Not Regulated

UNITED STATES:

EPA WASTE NUMBER: D011

DOT CLASSIFICATION: Not Regulated

CANADA:

PIN NUMBER: Not Regulated

TDG CLASS: Not Regulated

EC:

DGL: Not Determined

===== SECTION 15: REGULATORY INFORMATION =====

US FEDERAL REGULATIONS:

TSCA: IN TSCA

SARA 311 AND 312 HAZARD CATEGORIES:

IMMEDIATE (ACUTE) HEALTH HAZARD: YES

DELAYED (CHRONIC) HEALTH HAZARD: YES

FIRE HAZARD: NO

REACTIVITY HAZARD: NO

SUDDEN RELEASE OF PRESSURE: NO

SARA SECTION 313 NOTIFICATION: This product contains a toxic chemical (or emicals) subject to the reporting requirements of Section 313 of Title III the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

CHEMICAL NAME	GAS NUMBER	% WT.
SILVER	7440-22-4	100

OZONE DEPLETING SUBSTANCES (ODS): This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC): None

US STATE REGULATIONS:

VOLATILE ORGANIC COMPOUND (CARB): Not Determined

CANADIAN REGULATIONS:

DSL/NDSL: Not Determined

WHMIS CLASSIFICATION: Not Determined

EUROPEAN REGULATIONS:

EINECS: Not Determined

OTHER REGULATIONS:

MITI: Not Determined

AICS: Not Determined

===== SECTION 16: OTHER INFORMATION =====

REVISIONS:

REVISION NUMBER: 3

THIS MSDS HAS BEEN REVISED IN THE FOLLOWING SECTION(S):

SECTION IV: FIRST AID MEASURES

SECTION V: FIRE-FIGHTING MEASURES

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

PREPARATION INFORMATION:

PREPARED BY: Corporate Environment, Health & Safety Group

PHONE NUMBER: See Section I

The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling this product. The information presented in the MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section I to make certain that this sheet is current.

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Waste Stream Number: 104-1

Waste Stream Title: Cleaning Solutions

W
4W

104-1

✓

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 910227-022 Project: WMGT RFD Customer Sample ID: RFD-1708
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 13-FEB-1991 Date Sample Received: 13-FEB-1991
Sampled By: SA MOORE Date Sample Completed: 2-NOV-1992
Material Description: LEAD CLEANING SOLUTION

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
EC-006	Arsenic	ND		mg/L	EL SIMPSON	10-MAR-1992	S
EC-013	Mercury	ND		mg/L	EL SIMPSON	10-MAR-1992	S
EC-015	Selenium	ND		mg/L	EL SIMPSON	10-MAR-1992	S
EC-016	Silver	ND		mg/L	EL SIMPSON	10-MAR-1992	S
SW846-8080	PCB(TOTAL)	<1		ug/g	DK PEREZ	1-APR-1991	
TSD515-500	Uranium (Waste)	<1		ug/g	CJ HOLBROOK	5-APR-1991	NA
T	Barium	< 20		ug/g	AL SHULTZ	13-AUG-1991	
	Cadmium	< 0.5 N		ug/g	AL SHULTZ	13-AUG-1991	
	Chromium	< 3		ug/g	AL SHULTZ	13-AUG-1991	
	Lead	1500 E		ug/g	AL SHULTZ	13-AUG-1991	
TSD553-370	Technetium (Waste)	2		pCi/ml	BJ STANLEY	19-APR-1991	

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
BARIIUM	1.014	1.082	106.72
CHROMIUM	1.014	1.010	99.60

***** Comments from the Spectrochemistry/ICP Laboratory *****

N - Spike sample recovery not within control limits.

E - Reported value is estimated.

***** Comments from the Environmental and Industrial Hygiene Laboratory *****

ND-- NOT DONE, sample is past the holding time

***** Comments from the Organic Analytical Services *****

Analysis cancelled per POEF-550-92-72, Oct.7, 1992.

Inorganic Data Reporting Qualifiers and Flags:

Detection Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Flag "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
D. E. Boyd (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 2-NOV-1992

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 910227-022
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD-1708
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 13-FEB-1991
Date Sampled: 13-FEB-1991

Solvents_F002

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-NOV-1992
QA File Number: NA
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		CAS
108-90-7	Chlorobenzene	NA
	o-Dichlorobenzene	NA
76-13-1	Freon 113	NA
75-09-2	Methylene Chloride	NA
127-18-4	Tetrachloroethene	NA
71-55-6	1,1,1-Trichloroethane	NA
79-00-5	1,1,2-Trichloroethane	NA
79-01-6	Trichloroethene	NA
75-69-4	Trichlorofluoromethane	NA

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 910227-022
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD-1708
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 13-FEB-1991
Date Sampled: 13-FEB-1991

Solvents_F003

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-NOV-1992
QA File Number: NA
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		CAS	
67-64-1	Acetone	NA	
	n-Butyl alcohol	NA	
108-94-1	Cyclohexanone	NA	
141-78-6	Ethyl Acetate	NA	
	Ethylbenzenes	NA	
60-29-7	Ethyl ether	NA	
67-56-1	Methanol	NA	
	4-Methyl-2-pentanone (MIBK)	NA	
	Xylenes	NA	

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 910227-022
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD-1708
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 13-FEB-1991
Date Sampled: 13-FEB-1991

Solvents_F005

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-NOV-1992
QA File Number: NA
Dilution Factor: 1.0
Analyst: PJ WARD

CAS			CAS
71-43-2	Benzene	NA	
	i-Butanol	NA	
	2-Butanone (MEK)	NA	
75-15-0	Carbon Disulfide	NA	
	2-Ethoxy ethanol	NA	
	2-Nitropropane	NA	
110-86-1	Pyridine	NA	
108-88-3	Toluene	NA	

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 104-2

Waste Stream Title: Lead Dust/Debris, Filters, PPE

Internal Correspondence

MARTIN MARIETTA ENERGY SYSTEMS, INC.

December 29, 1992
POEF-554-92-708

WISID-
104-2

T. A. Brooks, MS-7550

Toxicity Characteristic Leaching Procedure [TCLP] - X-104 Floor Sweepings

A sample of floor sweepings from the X-104 Building, RFD-4234 (10/21/91), was submitted for a TCLP test. The test was performed according to Method 1311, as published in the FEDERAL REGISTER and revised June 29, 1990. The Zero Headspace Extractor [ZHE] was used to verify values of volatile organic constituents. Matrix interferences were checked for each parameter and appropriate corrections made, except for lead and selenium. Analytical recoveries of surrogate standard compounds in the semivolatile extracts were less than quality control limits. Analyses showed the concentration of lead exceeded the limits as stated in Table 1 of 40 CFR Part 261.24. Because of 0% matrix spike recovery, the concentrations of the cresols and mercury are greater than limits. The detection limit for selenium is greater than the limit. Other concentrations of toxicity characteristics are less than limits.

Tentatively identified compounds and LDR compounds were found. These organic compounds and concentration values can be found in POEF-554-92-628, November 30, 1992.

L. E. Deacon

L. E. Deacon, X-710, MS-2215, PORTS (5774)

M. R. Kelley

M. R. Kelley, X-710, MS-2215, PORTS (5774)

LED:MRK:msc

cys: C. P. Moore MS-7550
A. J. Saraceno MS-2209
C. W. Skaggs MS-2234A
N. J. Smith MS-2212
B. E. Upham MS-7550
D/554 File - RC

TABLE 1. ORGANIC ANALYSES OF TCLP EXTRACT
(Units are mg/L.)

	<u>Concentration</u>	<u>Regulatory Limit</u>
VOLATILES		
Benzene	<0.003	0.5
Carbon Tetrachloride	<0.003	0.5
Chlorobenzene	<0.003	100.0
Chloroform	<0.003	6.0
1,4-Dichlorobenzene	<0.003	7.5
1,2-Dichloroethane	<0.003	0.5
1,1-Dichloroethylene	<0.003	0.7
Methyl Ethyl ketone	<0.12	200.0
Tetrachloroethylene	0.031	0.7
Trichloroethylene	<0.004	0.5
Vinyl Chloride	<0.007	0.2
SEMIVOLATILES [ACIDS]***		
<i>o</i> -Cresol	>200**	200.0*
<i>m</i> -Cresol	>200**	200.0*
<i>p</i> -Cresol	>200**	200.0*
Pentachlorophenol	<0.054	100.0
2,4,5-Trichlorophenol	<0.15	400.0
2,4,6-Trichlorophenol	<0.078	2.0
SEMIVOLATILES [BASE-NEUTRALS]***		
2,4-Dinitrotoluene	<0.040	0.13
Hexachlorobenzene	<0.13	0.13
Hexachlorobutadiene	<0.044	0.5
Hexachloroethane	<0.053	3.0
Nitrobenzene	<0.040	2.0
Pyridine	<0.20	5.0

* - Regulatory level for total cresol is 200.0 mg/L.

** - Corrected for 0% matrix spike recovery.

*** - Surrogate recoveries were less than QC limits.

T. A. Brooks
Page 3
December 29, 1992
POEF-554-92-708

TABLE 2. METALS ANALYSES OF TCLP EXTRACT
(Units are mg/L.)

<u>Sample</u>	<u>Arsenic</u>	<u>Barium</u>	<u>Cadmium</u>	<u>Chromium</u>	<u>Lead</u>	<u>Mercury</u>	<u>Selenium</u>	<u>Silver</u>
LIMIT	5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0
RFD-4234	<3.3	13	<0.76	<0.61	840*	>0.2**	<3.4*	<0.03

* - Uncorrected for matrix spike recovery.

** - Corrected for 0% matrix spike recovery.

✓

Analysis ID: 911021-053 Project: WMGT RFD Customer Sample ID: RFD-4234

Requisition Number:

Date Sample Received: 21-OCT-1991

Date Sample Completed: 5-JAN-1993

Material Description: RAGS X-104
DFS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
	Assay (% U-235, Waste)	NA		% U-235	BW SHORT	17-JAN-1992	NA
1311	1,1-Dichloroethene	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	1,2-Dichloroethane	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	1,4-Dichlorobenzene	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Arsenic	< 3.3		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Barium	13		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Benzene	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Cadmium	< 0.76		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Carbon Tetrachloride	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Chlorobenzene	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Chloroform	< 0.003		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Chromium	< 0.61		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Lead	840 **		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Mercury	> 0.2***		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Methy ethyl ketone	< 0.12		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Selenium	< 3.4		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Silver	< 0.03		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Tetrachloroethene	0.031		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Trichloroethene	< 0.004		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
	Vinyl Chloride	< 0.007		mg/L	MR KELLEY	24-OCT-1991	RFD-4234
TSD515-500	Uranium (Waste)	<1.0		UG/G	CJ HOLBROOK	14-JAN-1992	9210091
TSD553-340	Technetium (Waste)	<0.4		pci/g	BJ STANLEY	22-JAN-1992	92070054

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
-----	-----	-----	-----
URANIUM (WASTE)	50	48.8	97.62

***** Comments from the Radiochemistry Laboratory *****

Uranium to low for assay determination by gamma

***** Comments from the Chemical Technology Department *****

** - Uncorrected for matrix spike recovery.

*** - Corrected for 0% matrix spike recovery. -

recoveries of surrogate standard compounds in the semivolatile
ts were less than quality control limits.

Tentatively identified compounds and LDR compounds were also found.
These organic compounds and concentration values can be found in POEF-554-
92-628, November 30, 1992.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - V - Spike sample recovery is not within control limits.
The reported value is unusable. The value is for informational purposes only.
 - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

A. J. Saraceno (Chemical Technology Department)

Dr proved: 6-JAN-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 911021-053
Laboratory: Chemical Technology Department
File ID: RFD-4234
Instrument ID:
Authorized By: A. J. Saraceno

Customer Sample ID: RFD-4234
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 21-OCT-1991
Date Sampled: 21-OCT-1991

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 24-OCT-1991
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: RFD-4234
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	>200**			
108-39-4	m-Cresol	>200**			
106-44-5	4-Methylphenol	>200**			
87-86-5	Pentachlorophenol	0.054U			
95-95-4	2,4,5-Trichlorophenol	0.15 U			
88-06-2	2,4,6-Trichlorophenol	0.078U			

Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 911021-053
Laboratory: Chemical Technology Department
File ID: RFD-4234
Instrument ID:
Authorized By: A. J. Saraceno

Customer Sample ID: RFD-4234
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 21-OCT-1991
Date Sampled: 21-OCT-1991

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 24-OCT-1991
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: RFD-4234
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.040U			
118-74-1	Hexachlorobenzene	0.13 U			
87-68-3	Hexachlorobutadiene	0.044U			
67-72-1	Hexachloroethane	0.053U			
98-95-3	Nitrobenzene	0.040U			
110-86-1	Pyridine	0.20 U			

Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 104-3

Waste Stream Title: Waste Lead Bullets

PORTS MSDS #: 347

PRODUCT: STANDARD, LEAD 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Pb

KEYWORD: STANDARD

PORTS NUMBER: 00190041-100; 00190028-100; 00190041

PORTS MISC INFO:

LAB MSDS# 334

LAB MSDS# 347

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . ~ 212 F

NOTE: ~100'C.

Melting Point. . . . ~ 32 F

NOTE: ~0'C.

Freezing Point. . . . NG

Pour Point. . . . NG

Softening Point. . . NG

Specific Gravity . . ~ 1

Vapor Pressure . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Vapor Density. . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Percent Volatiles. . ~ 99

NOTE: @ 21'C.

Evaporation Rate . . NA

NOTE: NOT APPLI/NOT AVAIL.

pH NA

NOTE: NOT APPLI/NOT AVAIL.

Molecular Weight . . EQ 207.20

NOTE: FORMULA WT.

Viscosity. NG

Solubility in Water. COMPLETE (100%).

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLI/NOT AVAIL.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

NOTE: NOT APPLI/NOT AVAIL.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Upper (UEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

=====

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

===== Component Information =====

LEAD

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.15
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 1.0
C.A.S. No.: 7439921

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product %: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTIN I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Lead Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Pb

FORMULA WT.: 207.20

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.

CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: This product contains a chemical known to the State of California to cause birth defects and other reproductive harm.

EFFECTS OF OVEREXPOSURE:

INHALATION: Severe irritation or burns of respiratory system, headache, nausea, vomiting, dizziness, pulmonary edema, lung inflammation, may be fatal

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, nausea, vomiting, kidney dysfunction

CHRONIC EFFECTS: Damage to lungs, teeth, anemia, kidney damage, blurred vision, lead build-up in the central nervous system

TARGET ORGANS: Eyes, skin, mucous membranes, GI tract, central nervous system, gingival tissue, respiratory system, lungs, kidneys, blood, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease, lung disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If conscious, give water, milk or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Lead (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Lead and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

===== SECTION VI - REACTIVITY DATA =====

TABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURES: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: Cascade-1

Waste Stream Title: Gas Analyzer Waste

Portsmouth Gaseous Diffusion Plant

Technical Services Division

Analysis Results

ANALIS ID: 930707-024 Project: WMGT RFD Customer Sample ID: RFD17261
 Customer: WASTE MANAGEMENT Requisition Number: 001274
 Date Sampled: 2-JUL-1993 Date Sample Received: 7-JUL-1993
 Sampled By: BK KELLEY Date Sample Completed: 31-AUG-1993
 Material Description: X333 MC110 LAB WASTE

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-6010	Arsenic	3.8U		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Barium	13.8*		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Cadmium	7.9		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Chromium	22.4*		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Lead	52.8*		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Selenium	4.7U		MG/KG	EL SIMPSON	30-AUG-1993	93080633
	Silver	0.65N*		MG/KG	EL SIMPSON	30-AUG-1993	93080633
SW846-7470	Mercury	.027N		mg/kg	EK GILBERT	22-JUL-1993	93080494
SW846-8080	PCB (TOTAL)	2.5		ug/ml	JN STRICKLAND	9-JUL-1993	93160356
TSD553-230	Gross Alpha Activity	67.2		pCi/mL	JJ SISLER	26-JUL-1993	93071106
	Gross Beta Activity	139.2		pCi/mL	JJ SISLER	26-JUL-1993	93071106
-370	Technetium	22.3		pCi/ml	CJ WHEELER	20-JUL-1993	93071074
TSD553-440	Total Uranium	55.7		ppm	BW SHORT	8-JUL-1993	93071010

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	39.22	39.999	101.99
BARIUM	39.22	42.2451	107.71
CADMIUM	39.22	40.3284	102.83
CHROMIUM	39.22	40.502	103.27
LEAD	39.22	43.8922	111.91
MERCURY	0.150	0.102	68.00
SELENIUM	39.22	40.8892	104.26
SILVER	39.22	28.0667	71.56

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- t analyzed.
- ^ - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
 D. E. Boyd (Spectrochemistry/ICP Laboratory)
 J. J. Williams (Organic Analytical Services)

Date Approved: 1-SEP-1993

AnalIS ID: 930707-024
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD17261
Customer: WASTE MANAGEMENT
Sample Matrix:
Requisition Number: 001274
Date Sample Received: 7-JUL-1993
Date Sampled: 2-JUL-1993

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 13-AUG-1993
QA File Number: 93160501
Dilution Factor: 0.2
Analyst: PJ WARD

CAS		ug/ml	CAS		ug/ml
71-43-2	Benzene	100U			
	2-Butanone (MEK)	100U			
56-23-5	Carbon Tetrachloride	0.004U			
108-90-7	Chlorobenzene	100U			
67-66-3	Chloroform	0.04			
	p-Dichlorobenzene	0.01U			
107-06-2	1,2-Dichloroethane	0.08U			
75-35-4	1,1-Dichloroethene	0.004U			
127-18-4	Tetrachloroethene	0.004U			
79-01-6	Trichloroethene	0.008			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
NR - Not reported.
NA - Not analyzed.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

WASTE STREAM: CASCADE-1 DATE: 11/29/94

RFD#	CONT#	CONT WT	U (PPM)	U-235(frct)	U-235 (g)
=	=====	=====	=====	=====	=====
17261		441	55.7	0.02	0.223038

Waste Stream Number: Cascade-2

Waste Stream Title: Solvent

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920325-011 Project: WNGT RFD Customer Sample ID: RFD-9130
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 23-MAR-1992 Date Sample Received: 23-MAR-1992
Sampled By: B KELLEY Date Sample Completed: 30-DEC-1992
Material Description: WASTE TCE

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
	Assay (% U-235, Waste)	NA		% U-235	JD LITTERAL		
TSD515-500	Uranium (Waste)	1.1		UG/G	CJ HOLBROOK	25-MAR-1992	92100507
TSD553-380	Technetium (Waste)	2.2		pCi/ml	JJ SISLER	9-APR-1992	92070220

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
URANIUM (WASTE)	40	31.7	79.30

Qualification Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
- The value is between the LC and the LLD.

Entering "S", "U", OR "W" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

D. E. Boyd (Organic Analytical Services)

Date Approved: 31-DEC-1992

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920325-011
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-9130
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 23-MAR-1992
Date Sampled: 23-MAR-1992

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 21-DEC-1992
QA File Number: 92160314
Dilution Factor: 50
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride |	1.00U			
75-09-2	Methylene Chloride |	1.00U			
127-18-4	Tetrachloroethene |	15			
71-55-6	1,1,1-Trichloroethane 2	230E			
79-01-6	Trichloroethene |	210E			

Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: Cascade-3

Waste Stream Title: Decontamination Waste Solutions

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

CAS-3
DOE

AnalIS ID: 960920-030 Project: ER 9567DE Requisition Number: 22175
Customer Sample ID: VER36901001 Customer: ENV RESTORATION
Date Sampled: 19-SEP-1996 09:25 Date Sample Received: 19-SEP-1996
Sampled By: B PYLES Date Sample Completed: 24-OCT-1996
Material Description:

** See comment page for comments. **
** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed
SW846-3010A	Sample Prep Metals	COMPLETE			ML STEWART	27-SEP-1996
SW846-6010A	Aluminum	31300*		ug/L	TE SHOOK	27-SEP-1996
	Antimony	3000B		ug/L	TE SHOOK	27-SEP-1996
	Arsenic	234UN		ug/L	TE SHOOK	27-SEP-1996
	Barium	711N		ug/L	TE SHOOK	27-SEP-1996
	Beryllium	11.0UN		ug/L	TE SHOOK	27-SEP-1996
	Cadmium	1280		ug/L	TE SHOOK	27-SEP-1996
	Calcium	192000*J		ug/L	TE SHOOK	27-SEP-1996
	Chromium	2150		ug/L	TE SHOOK	27-SEP-1996
	Cobalt	237BN		ug/L	TE SHOOK	27-SEP-1996
	Copper	5580		ug/L	TE SHOOK	27-SEP-1996
	Iron	61900*		ug/L	TE SHOOK	27-SEP-1996
	Lead	11500*		ug/L	TE SHOOK	27-SEP-1996
	Magnesium	30700		ug/L	TE SHOOK	27-SEP-1996
	Manganese	2980*		ug/L	TE SHOOK	27-SEP-1996
	Molybdenum	400N*		ug/L	TE SHOOK	27-SEP-1996
	Nickel	1200		ug/L	TE SHOOK	27-SEP-1996
	Potassium	9580000*		ug/L	TE SHOOK	27-SEP-1996
	Selenium	643BN		ug/L	TE SHOOK	27-SEP-1996
	Silver	49.0UN		ug/L	TE SHOOK	27-SEP-1996
	Sodium	2760*J		mg/L	TE SHOOK	27-SEP-1996
	Thallium	243U		ug/L	TE SHOOK	27-SEP-1996
	Vanadium	92.9BNJ		ug/L	TE SHOOK	27-SEP-1996
	Zinc	46400*		ug/L	TE SHOOK	27-SEP-1996
TSD553-230	Gross Alpha	156		pCi/mL	JP BREWSTER	3-OCT-1996
	Gross Beta	320		pCi/mL	JP BREWSTER	3-OCT-1996
TSD553-380	Technetium	85.4		pCi/mL	JP BREWSTER	23-OCT-1996
TSD553-700	% U-235	0.93	0.26	%	CD GOOD	15-OCT-1996
TSD553-710	Uranium	154	23	ug/mL	CD GOOD	15-OCT-1996

Spike Recovery Data

	Amount Spiked	Amount Recovered	Percent Recovered

Barium	400	288.7	72.18
Beryllium	400	275.9	68.97
Cadmium	400	409.0	102.25
Cobalt	400	284.1	71.02
Molybdenum	400	267.2	66.80
Nickel	400	359.9	89.98
Selenium	400	-57.0	-14.25
Silver	400	0.	0.00
Thallium	400	368.7	92.18
Vanadium	400	134.2	33.55

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
Date Approved: 24-OCT-1996

***** COMMENT PAGE *****
***** 960920-030 *****

*** Comments from the Spectrochemistry/ICP Laboratory ***

S -6010A V qualified as estimate due to calibration verification not meeting Q.C. limits.

SW846-6010A Ca and Na qualified as estimate due to laboratory control sample not meeting Q.C. limits.

NOTE: Units for Na are MG/L.

Definition Page for Qualifiers/Flags

960920-030

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same result.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

Waste Stream Number: Cascade-4

Waste Stream Title: Waste Oil/Solvent

Portsmouth Analytical Laboratory
Official Report

Customer Smpl Id: VER42426001

S: X-04-WM BJC09824

Proj Analyses: OIL

Customer: J A APPLGATE

COC#: 061101

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: OIL

Protocol: RCRA

Status: APPROVED

Location:

Sampled: 07/09/98 13:00:00

Received: 07/10/98 09:35:24

Needed: 08/14/98 23:59:00

Approved: 08/11/98 15:55:03

Analy Meth: SW846-6010A
Prep Meth: PORTS-CEM-OP-5

QC Batch: Test: 6010AMETALS5
Analyzed: 07/23/98 00:00:00 T E SHOOK

Rpt Basis: none
Approver: D K PEREZ

Date Approved
07/30/98 16:33

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	17.2		mg/kg	NU			10		
Antimony	40.8		mg/kg	NU			10		
Arsenic	29.4		mg/kg	NU			10		
Barium	1.4		mg/kg	U			10		
Beryllium	0.20		mg/kg	U			10		
Cadmium	2.3		mg/kg	U			10		
Calcium	87.8		mg/kg	JN			10		
Chromium	12.3		mg/kg	U			10		
Cobalt	19.8		mg/kg	U			10		
Copper	20.7		mg/kg				10		
Iron	115		mg/kg	N			10		
Lead	29.4		mg/kg	U			10		
Magnesium	19.8		mg/kg	NU			10		
Manganese	0.90		mg/kg	JU			10		
Molybdenum	NA		mg/kg						
Nickel	7.0		mg/kg	U			10		
Potassium	397		mg/kg	JNU			10		
Selenium	33.8		mg/kg	JNU			10		
Silver	4.1		mg/kg	JU			10		
Sodium	62.3		mg/kg				10		
Thallium	39.1		mg/kg	NU			10		
Vanadium	2.6		mg/kg	U			10		
Zinc	20.9		mg/kg				10		

Comments: QC File: 98080558

Ca, Se, Ag qualified as estimates due to lab control sample not meeting acceptance limits. K and Mn qualified as estimate due to interference check not meeting acceptance limits.

Analy Meth: PORTS-CEM-OP-5
Prep Meth:

QC Batch: Test: DIESELPREP
Analyzed: 07/22/98 00:00:00 M L STEWART

Rpt Basis: none
Approver: D K PEREZ

Date Approved
08/05/98 16:39

Meth:SW846-7470A	QC Batch:	Test:HG7470A	Rpt Basis:none	Date Ap	d
Meth:	Analyzed:07/23/98 00:00:00 C J MAYNARD	Approver: D K PEREZ	08/03/9	6	

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	1370		mg/kg				1		

Comments: QC File: 98080554

EPA Qualifiers:

- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth:SW846-3580	QC Batch:QC98205002 Test:ORGE XT-SVOC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/21/98 00:00:00 D K SCAGGS	Approver: C J VANMETER	08/11/98 15:46

Analy Meth:SW846-8270B	QC Batch:QC98216005 Test:SVOC	Rpt Basis:none	Date Approved
Prep Meth: SW846-3580	Analyzed:07/27/98 00:00:00 R J WAWRO	Approver: C J VANMETER	08/11/98 15:53

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	110000		ug/kg	U		110000	2		
1 2-Dichlorobenzene	110000		ug/kg	U		110000	2		
1,3-Dichlorobenzene	110000		ug/kg	U		110000	2		
1,4-Dichlorobenzene	110000		ug/kg	U		110000	2		
2,4,5-Trichlorophenol	110000		ug/kg	U		110000	2		
2,4,6-Trichlorophenol	110000		ug/kg	U		110000	2		
2,4-Dichlorophenol	110000		ug/kg	U		110000	2		
2,4-Dimethylphenol	110000		ug/kg	U		110000	2		
2,4-Dinitrophenol	550000		ug/kg	JU		550000	2		
2,4-Dinitrotoluene	110000		ug/kg	U		110000	2		
2,6-Dinitrotoluene	110000		ug/kg	U		110000	2		
2-Chloronaphthalene	110000		ug/kg	U		110000	2		
2-Chlorophenol	110000		ug/kg	U		110000	2		
2-Methyl-4,6-dinitrophenol	550000		ug/kg	JU		550000	2		
2-Methylphenol	110000		ug/kg	U		110000	2		
2-Nitrophenol	110000		ug/kg	U		110000	2		
3(4)-Methylphenol	110000		ug/kg	U		110000	2		
4-Bromophenyl phenyl ether	110000		ug/kg	U		110000	2		
4-Chloro-3-methylphenol	220000		ug/kg	U		220000	2		
4-Chlorophenylphenyl ether	110000		ug/kg	U		110000	2		
4-Nitrophenol	550000		ug/kg	U		550000	2		
Acenaphthene	110000		ug/kg	U		110000	2		
Acenaphthylene	110000		ug/kg	JU		110000	2		
Anthracene	110000		ug/kg	U		110000	2		
Benzo(a)anthracene	110000		ug/kg	U		110000	2		
Benzo(a)pyrene	110000		ug/kg	U		110000	2		
Benzo(b)fluoranthene	110000		ug/kg	U		110000	2		
(ghi)perylene	110000		ug/kg	U		110000	2		

Meth:PORTS-OA97333006	QC Batch:QC98205003 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Meth:	Analyzed:07/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/27/98 10:20

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	8230		pCi/ml	J		- 0.3	
Beta activity	3745		pCi/ml	J		0.8	

Analy Meth:PORTS-XP4-TS-RL7380	QC Batch:QC98204003 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/27/98 10:15

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	3400		pCi/ml			5.5	

Analy Meth:PORTS-XP4-TS-RL7720ug	QC Batch:QC98215010 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/28/98 00:00:00 R J ANDRE	Approver: B W SHORT	08/04/98 12:50

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	55	14	ug/ml				
Uranium-235	13	5.6	wt %				

EPA Qualifiers:

J - Indicates an estimated value.

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
o(k)fluoranthene	110000		ug/kg	U		110000	2		
2-(2-chloroethoxy)methane	110000		ug/kg	U		110000	2		
Bis(2-chloroethyl) ether	110000		ug/kg	U		110000	2		
Bis(2-chloroisopropyl) ether	110000		ug/kg	U		110000	2		
Bis(2-ethylhexyl)phthalate	190000		ug/kg			110000	2		
Butylbenzylphthalate	110000		ug/kg	U		110000	2		
Chrysene	110000		ug/kg	U		110000	2		
Di-n-butylphthalate	110000		ug/kg	U		110000	2		
Di-n-octylphthalate	110000		ug/kg	U		110000	2		
Dibenz(a,h)anthracene	110000		ug/kg	U		110000	2		
Diethylphthalate	110000		ug/kg	U		110000	2		
Dimethylphthalate	110000		ug/kg	U		110000	2		
Diphenyldiazene	110000		ug/kg	U		110000	2		
Fluoranthene	110000		ug/kg	U		110000	2		
Fluorene	110000		ug/kg	U		110000	2		
Hexachlorobenzene	110000		ug/kg	U		110000	2		
Hexachlorobutadiene	110000		ug/kg	JU		110000	2		
Hexachlorocyclopentadiene	110000		ug/kg	U		110000	2		
Hexachloroethane	110000		ug/kg	U		110000	2		
Indeno(1,2,3-cd)pyrene	110000		ug/kg	U		110000	2		
Isophorone	110000		ug/kg	U		110000	2		
N-Nitroso-di-n-propylamine	110000		ug/kg	U		110000	2		
N-Nitrosodimethylamine	110000		ug/kg	U		110000	2		
N-Nitrosodiphenylamine	110000		ug/kg	U		110000	2		
Naphthalene	110000		ug/kg	U		110000	2		
n-benzene	110000		ug/kg	U		110000	2		
2-chlorophenol	550000		ug/kg	U		550000	2		
Phenanthrene	110000		ug/kg	U		110000	2		
Phenol	110000		ug/kg	U		110000	2		
Pyrene	110000		ug/kg	U		110000	2		
Pyridine	110000		ug/kg	U		110000	2		

Comments:

There were 4 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(27%), 4,6-dinitro-2-methylphenol(19%), hexachlorbutadiene(16%) and acenaphthylene(16%).

Because the sample was an oil, the waste dilution sample preparation was diluted by an additional factor of 2 to minimize the matrix effects caused by the oil.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of quantitation (LOQ).

Waste Stream Number: Cascade-5

Waste Stream Title: Oil

Customer Smpl Id: VER47613015

t:X-04-WM BJC09824

oj Analyses: LIQUID

Customer: J A APLEGATE

COC#: 061051

Sample Desc:

Customer Comments:

Lab Smpl Comments:

Matrix: LIQUID

Protocol: RCRA

Status: APPROVED

Location:

Sampled: 07/17/98 10:00:00

Received: 07/17/98 12:35:31

Needed: 08/21/98 23:59:00

Approved: 08/18/98 11:13:13

Analy Meth: SW846-3015

QC Batch:

Test: 3015PREP

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 07/22/98 00:00:00 M L STEWART

Approver: D K PEREZ

08/05/98 16:40

Analy Meth: SW846-6010A

QC Batch:

Test: 6010AMETALS5

Rpt Basis: none

Date Approved

Prep Meth: SW846-3015

Analyzed: 07/23/98 00:00:00 T E SHOOK

Approver: D K PEREZ

08/18/98 11:11

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	17.2		ug/L	*NU			10		
Antimony	40.8		ug/L	NU			10		
Arsenic	29.4		ug/L	NU			10		
Barium	1.4		ug/L	U			10		
Beryllium	0.20		ug/L	U			10		
Cadmium	2.3		ug/L	U			10		
Calcium	78.3		ug/L	*JN			10		
Chromium	12.3		ug/L	U			10		
Copper	19.8		ug/L	U			10		
Cobalt	3.8		ug/L				10		
Iron	5.8		ug/L	U			10		
Lead	29.4		ug/L	U			10		
Magnesium	23.2		ug/L	*N			10		
Manganese	0.90		ug/L	JU			10		
Molybdenum	2.8		ug/L	U			10		
Nickel	7.0		ug/L	U			10		
Potassium	397		ug/L	JNU			10		
Selenium	33.8		ug/L	JNU			10		
Sodium	53.7		ug/L	N			10		
Thallium	39.1		ug/L	NU			10		
Vanadium	2.6		ug/L	U			10		
Zinc	522		ug/L				10		

Comments: QC File: 98080558

Ca, Se qualified as estimate due to Lab Control Sample not meeting acceptance limits. K and Mn qualified as estimate due to interference check not meeting acceptance limits.

Meth:SW846-7470A	QC Batch:	Test:HG7470A	Rpt Basis:none	Date Approved
Meth:	Analyzed:07/23/98 00:00:00 C J MAYNARD		Approver: D K PEREZ	08/03/9

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	10		ug/L	NU			1		

Comments: QC File: 98080554

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth:SW846-3520	QC Batch:QC98205002	Test:ORGEXT-SVOC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/21/98 00:00:00 D K SCAGGS		Approver: C J VANMETER	07/28/98 17:13

Analy Meth:SW846-8270B	QC Batch:QC98209002	Test:SVOC	Rpt Basis:none	Date Approved
Prep Meth: SW846-3520	Analyzed:07/23/98 00:00:00 R J WAWRO		Approver: C J VANMETER	07/28/98 17:15

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	110000		ug/kg	U		110000	2		
Dichlorobenzene	110000		ug/kg	U		110000	2		
Dichlorobenzene	110000		ug/kg	U		110000	2		
1,4-Dichlorobenzene	110000		ug/kg	U		110000	2		
2,4,5-Trichlorophenol	110000		ug/kg	U		110000	2		
2,4,6-Trichlorophenol	110000		ug/kg	U		110000	2		
2,4-Dichlorophenol	110000		ug/kg	U		110000	2		
2,4-Dimethylphenol	110000		ug/kg	U		110000	2		
2,4-Dinitrophenol	550000		ug/kg	JU		550000	2		
2,4-Dinitrotoluene	110000		ug/kg	U		110000	2		
2,6-Dinitrotoluene	110000		ug/kg	U		110000	2		
2-Chloronaphthalene	110000		ug/kg	U		110000	2		
2-Chlorophenol	110000		ug/kg	U		110000	2		
2-Methyl-4,6-dinitrophenol	550000		ug/kg	JU		550000	2		
2-Methylphenol	110000		ug/kg	U		110000	2		
2-Nitrophenol	110000		ug/kg	U		110000	2		
3(4)-Methylphenol	110000		ug/kg	U		110000	2		
4-Bromophenyl phenyl ether	110000		ug/kg	U		110000	2		
4-Chloro-3-methylphenol	220000		ug/kg	U		220000	2		
4-Chlorophenylphenyl ether	110000		ug/kg	U		110000	2		
4-Nitrophenol	550000		ug/kg	U		550000	2		
Acenaphthene	110000		ug/kg	U		110000	2		
Acenaphthylene	110000		ug/kg	U		110000	2		
Anthracene	110000		ug/kg	U		110000	2		
Benzo(a)anthracene	110000		ug/kg	U		110000	2		
Benzo(a)pyrene	110000		ug/kg	U		110000	2		
(b)fluoranthene	110000		ug/kg	U		110000	2		

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
o(ghi)perylene	110000		ug/kg	U		110000	2		
o(k)fluoranthene	110000		ug/kg	U		110000	2		
Bis(2-chloroethoxy)methane	110000		ug/kg	U		110000	2		
Bis(2-chloroethyl) ether	110000		ug/kg	U		110000	2		
Bis(2-chloroisopropyl) ether	110000		ug/kg	U		110000	2		
Bis(2-ethylhexyl)phthalate	110000		ug/kg	U		110000	2		
Butylbenzylphthalate	110000		ug/kg	U		110000	2		
Chrysene	110000		ug/kg	U		110000	2		
Di-n-butylphthalate	110000		ug/kg	U		110000	2		
Di-n-octylphthalate	110000		ug/kg	U		110000	2		
Dibenz(a,h)anthracene	110000		ug/kg	U		110000	2		
Diethylphthalate	110000		ug/kg	U		110000	2		
Dimethylphthalate	110000		ug/kg	U		110000	2		
Diphenyldiazene	110000		ug/kg	U		110000	2		
Fluoranthene	110000		ug/kg	U		110000	2		
Fluorene	110000		ug/kg	U		110000	2		
Hexachlorobenzene	110000		ug/kg	U		110000	2		
Hexachlorobutadiene	110000		ug/kg	U		110000	2		
Hexachlorocyclopentadiene	110000		ug/kg	U		110000	2		
Hexachloroethane	110000		ug/kg	U		110000	2		
Indeno(1,2,3-cd)pyrene	110000		ug/kg	U		110000	2		
Isophorone	110000		ug/kg	U		110000	2		
N-Nitroso-di-n-propylamine	110000		ug/kg	U		110000	2		
N-Nitrosodimethylamine	110000		ug/kg	U		110000	2		
N-Nitrosodiphenylamine	110000		ug/kg	U		110000	2		
thalene	110000		ug/kg	U		110000	2		
benzene	110000		ug/kg	U		110000	2		
Pentachlorophenol	550000		ug/kg	U		550000	2		
Phenanthrene	110000		ug/kg	U		110000	2		
Phenol	110000		ug/kg	U		110000	2		
Pyrene	110000		ug/kg	U		110000	2		
Pyridine	110000		ug/kg	U		110000	2		

Comments:

There were 2 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(27%),and 4,6-dinitro-2-methylphenol(16%).

Because the sample was an oil, the waste dilution sample preparation was diluted by an additional factor of 2 to minimize the matrix effects caused by the oil.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of quantitation (LOQ).

Meth:PORTS-OA97333006	QC Batch:QC98205003 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/27/98 10:17

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec
Alpha activity	3.5		pCi/ml			0.1	
Beta activity	4.4		pCi/ml			0.4	

Analy Meth:PORTS-XP4-TS-RL7380	QC Batch:QC98204003 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	07/27/98 10:17

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	4.7		pCi/ml			1.1	

Analy Meth:PORTS-XP4-TS-RL7720ug	QC Batch:QC98215010 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:07/28/98 00:00:00 R J ANDRE	Approver: B W SHORT	08/04/98 12:54

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	5.3	0.73	ug/ml				
Uranium-235	1.2	0.47	wt %				

***** END OF REPORT *****

Waste Stream Number: Cascade-6

Waste Stream Title: Decontamination Waste Solids

WSID-CASCADE-6

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 920129-041 Project: WMGD WMS Customer Sample ID: WMS-721
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 24-JAN-1992 Date Sample Received: 24-JAN-1992
Sampled By: AR SELBEE Date Sample Completed: 22-JAN-1993
Material Description: GUNK X 330 Equipment 100g

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	1,1-Dichloroethene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	1,2-Dichloroethane	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	1,4-Dichlorobenzene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Arsenic	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Barium	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Benzene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Cadmium	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Carbon Tetrachloride	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Chlorobenzene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Chloroform	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Chromium	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Lead	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Mercury	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Methy ethyl ketone	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Selenium	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Silver	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Tetrachloroethene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Trichloroethene	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
	Vinyl Chloride	NA		mg/L	MR KELLEY	28-JAN-1992	WMS-721
SW846-8080	PCB (TOTAL)	28.		ug/g	PA HUTCHINS	30-MAR-1992	92160073

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
PCB (TOTAL)	8.5	9.	105.88

***** Comments from the Infrared and Chromatographic Services Laboratory *****

Sample for PCB analysis was submitted on 3-6-92.

Q.C. Data

Control, 25. ug/g PCB 1260 in soil 21. (84% Recovery)
0.3U

identified: 1260, 1268

***** Comments from the TCLP Laboratory *****

M1 - Volatiles could not be analyzed within the 14 day holding time because sample load exceeded the laboratory capacity. No valid data for metals were reported.

TCLP_SV_ACIDS_RPT - Data corrected for matrix spike recovery.

TCLP_SV_B/N_RPT - Data corrected for matrix spike recovery.

X - Corrected for 0% matrix spike recovery.

Y - The concentration for pyridine exceeded the calibration range. The result is estimated and corrected for low matrix spike recovery. Pyridine exceeded the regulatory limit of 5.0 mg/L.

Recovery or surrogate compounds did not meet QC requirements.

Tentatively identified compounds were also found.

These organic compounds and concentration values can be found in POEF-554-92-618, November 24, 1992.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

ND - Not detected.
' - Not reported.
ot analyzed.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

Laboratory Manager: J. J. Williams (Organic Analytical Services)
J.J. Williams (TCLP Laboratory)

Date Approved: 22-JAN-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920129-041
Laboratory: TCLP Laboratory
File ID: WMS-721
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: WMS-721
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 24-JAN-1992
Date Sampled: 24-JAN-1992

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 28-JAN-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-721
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.2U			
108-39-4	m-Cresol	0.09U			
106-44-5	4-Methylphenol	0.2U			
87-86-5	Pentachlorophenol	0.56U			
95-95-4	2,4,5-Trichlorophenol	0.05U			
88-06-2	2,4,6-Trichlorophenol	0.04U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920129-041
Laboratory: TCLP Laboratory
File ID: WMS-721
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: WMS-721
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 24-JAN-1992
Date Sampled: 24-JAN-1992

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 28-JAN-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-721
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	>0.13X			
118-74-1	Hexachlorobenzene	0.02U			
87-68-3	Hexachlorobutadiene	0.02U			
67-72-1	Hexachloroethane	>3.0 X			
98-95-3	Nitrobenzene	0.5 U			
110-86-1	Pyridine	18 Y			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: Cascade-7A and 7B

Waste Stream Title: Mercury and Debris

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 971112-003 Project: ER 9763E Customer Sample ID: VER45653001
 Customer: ENV RESTORATION Requisition Number: 058413
 Date Sampled: 6-NOV-1997 10:30 Date Sample Received: 7-NOV-1997
 Sampled By: B PYLES Date Sample Completed: 17-DEC-1997

Material Description: ALUMINA & SODA LIME

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3050A	Sample Prep Metals	COMPLETE			ML STEWART	14-NOV-1997	111497-032
SW846-6010A	Aluminum	235000		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Antimony	16.6UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Arsenic	70.8BNJ		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Barium	7.2BN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Beryllium	2.7BN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Cadmium	1.7UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Calcium	86900		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Chromium	2.9UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Cobalt	3.2UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Copper	75.5BN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Iron	316B		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Lead	30.7B		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Magnesium	2910B		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Manganese	11.3BN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Molybdenum	2.8UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Nickel	6.2U		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Potassium	4020B		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Selenium	34.2UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Silver	4.7UNJ		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Sodium	4220B		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Thallium	23.1UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Vanadium	2.4UN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
	Zinc	38.4BN		MG/KG	TE SHOOK	14-NOV-1997	97R80890
SW846-7470A	Mercury	23.3		mg/kg	RK POWELL	4-DEC-1997	9708R909
TSD553-280	Gross Alpha	22130J		pCi/g	JP BREWSTER	14-DEC-1997	97071712
	Gross Beta	10603		pCi/g	JP BREWSTER	14-DEC-1997	97071712
TSD553-385	Technetium	70.8		pCi/g	JP BREWSTER	14-DEC-1997	97071713
TSD553-710	% U-235	2.1	0.44	%U-235	CD GOOD	13-NOV-1997	97071587
	Uranium	24797	2945	ug/g	CD GOOD	13-NOV-1997	97071587

Spike Recovery Data

	Amount Spiked	Amount Recovered	Percent Recovered
A			

Antimony	44.25	26.07	58.92
Arsenic	44.25	-2.86	-6.46
Barium	44.25	31.40	70.96
Beryllium	44.25	29.18	65.94
Cadmium	44.25	29.97	67.73
Chromium	44.25	5.37	12.14
Cobalt	44.25	28.59	64.61
Copper	44.25	10.54	23.82
Lead	44.25	51.34	116.02
Manganese	44.25	28.07	63.44
Nickel	44.25	37.22	84.11
Thallium	44.25	0.	0.00
Vanadium	44.25	0.	0.00
Zinc	44.25	21.56	48.72

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
Date Approved: 17-DEC-1997

***** COMMENT PAGE *****

***** 971112-003 *****

Comments from the Spectrochemistry/ICP Laboratory *****

SW 010A As qualified as estimate due to interference check not meeting Q.C. limits.

SW846-6010A Ag qualified as estimate due to lab control sample not meeting Q.C. limits.

Definition Page for Qualifiers/Flags

971112-003

Ino. . Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

ie value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an a .

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

Waste Stream Number: Cascade-8

Waste Stream Title: X-Ray Solutions

W.S. CAS-8

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 960206-023 Project: ER 9567C Requisition Number: 20209
Customer Sample ID: VER35685001 Customer: ENV RESTORATION
Date Sampled: 5-FEB-1996 10:00 Date Sample Received: 6-FEB-1996
Sampled By: R CAUDILL Date Sample Completed: 22-MAR-1996
Material Description: waste verification

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ACD-5101	Density	1.07		g/mL	ML STEWART	7-FEB-1996	96110011
SW846-1010	Flash Point	>80.0		oC	ML STEWART	15-MAR-1996	96110020
SW846-3051	Sample Prep Metals	COMPLETE			ML STEWART	19-FEB-1996	021996-042
SW846-3510	Sample Prep PCB	COMPLETE			SL EWING	8-FEB-1996	96160043
SW846-3520	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	12-FEB-1996	96160051
SW846-6010A	Arsenic	2340U		ug/L	TE SHOOK	19-FEB-1996	96080252
	Barium	110		ug/L	TE SHOOK	19-FEB-1996	96080252
	Cadmium	180U		ug/L	TE SHOOK	19-FEB-1996	96080252
	Chromium	300U		ug/L	TE SHOOK	19-FEB-1996	96080252
	Lead	1780U		ug/L	TE SHOOK	19-FEB-1996	96080252
	Selenium	3590U		ug/L	TE SHOOK	19-FEB-1996	96080252
	Silver	490UN		ug/L	TE SHOOK	19-FEB-1996	96080252
SW846-7470	Mercury	10U		ug/L	RL POLK	21-FEB-1996	96080185
SW846-8080	PCB-1232	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1242	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1248	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1254	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1260	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1268	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
	Total PCB	55UJ		ug/L	DH BLUE	17-FEB-1996	96160216M5
SW846-9010A	Total Cyanide	0.20UJ		mg/L	SL LEMASTER	9-FEB-1996	96100213
SW846-9020A	TOX	1200		ug/g	DE COLLINS	23-FEB-1996	96160223T4
SW846-9030A	Sulfide	50U		mg/L	SL LEMASTER	8-FEB-1996	96100205
SW846-9040B	pH	5.11		pH units	SL LEMASTER	6-FEB-1996	96100190
TSD55	Gross Alpha	UJ<1.3		pCi/mL	JP BREWSTER	15-MAR-1996	96070365
	Gross Beta	10.4		pCi/mL	JP BREWSTER	15-MAR-1996	96070365
TSD553-380	Technetium	<0.9		pCi/mL	JP BREWSTER	15-MAR-1996	96070363

TSD553-440	Cesium-134	<0.1J	pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Cesium-137	<0.2J	pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Cobalt-60	<0.3J	pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Gross Gamma	12.6J	pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
TSD553-700	% U-235	ND	ND %	CD GOOD	12-FEB-1996	96070187
	Alpha Activity	<1	pCi/mL	BW SHORT	12-FEB-1996	96070187
	Americium-241	<0.005	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Neptunium-237	<0.016	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Plutonium-238	<0.016	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Plutonium-239/240	<0.016	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-228	<0.050	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-230	<0.039	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-232	<0.041	N/A pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-234	<0.068	N/A pCi/mL	CD GOOD	12-FEB-1996	96070187
	Uranium	<0.20	NA ug/mL	CD GOOD	12-FEB-1996	96070187

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	40000	35852.0	89.63
Barium	40000	39078.	97.69
Cadmium	40000	35862.	89.65
Chromium	40000	36672.0	91.68
Lead	40000	34360.0	85.90
Mercury	40.0	30.6	76.50
Sel	40000	37387.0	93.47
Silver	40000	616.0	1.54
TOX	5900	4400.	74.58

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 C. J. Van Meter (Organic Analytical Services)

Date Approved: 22-MAR-1996

***** COMMENT PAGE *****
***** 960206-023 *****

** Comments from the Radiochemistry Laboratory ****

ACTIVITY RESULTS FOR 960206-023 ARE:

Analyte	Result(pCi/g)	+/-
K-40	12.0J	3.3J
Bi-214	0.6J	0.3J

***** Comments from the Environmental and Industrial Hygiene Laboratory *****

SW846-9010A cyanide result reported as an estimate due to blank spike outside acceptable QC limits (56% recovery). Replicate analysis was done with a result of 0.20J mg/L.

***** Comments from the Organic Analytical Services *****

Method SW846-3520: SV Extraction

Density problems were observed between sample and extraction solvent. Small amounts of liquid plated out onto extraction flask. More than 50 ml of H2SO4 was required to begin acidic extraction. Heat release and a color change from a dark clear brown to a cloudy light brown was observed during this extraction. A large amount of light precipitate made filtration of filtrate necessary. The filtrate was reconcentrated to 2 ml volume.

SW846-8080:

Due to the high level of matrix interference an additional 1:10 dilution was required, which resulted in the surrogate being diluted out of the sample and the result estimated.

--Method SW846-8270A

The waste verification project involves samples from a variety of matrices. These matrices are greatly different. Typically, when a verification sample for semi-volatile analysis arrives at the laboratory, an assessment of the analytical approach to this sample is made. This process involves information available from previous characterization of the waste that is included in the sampling plan, as well as preliminary testing performed on portions of the sample in the lab. This assessment allows a decision to be made as to the preparation technique to be used while allowing the lowest sample quantitation limits to be obtained. This sample was initially evaluated and a determination to extract one liter of the sample by Liquid/Liquid (SW846-3520A) was made. This would yield the lowest quantitation limits possible.

The extraction technique proceeded smoothly until the concentration step. When the volume of extraction solvent was reduced, it became apparent that compounds (most likely inorganic salts) had been extracted from the sample and were now insoluble in the amount of methylene chloride solvent remaining. The concentrate was separated from the salt and filtered to remove additional solids. This filtrate was then concentrated to the normal final volume of

2 ml.

Recoveries below established criteria were found for 2-Methylphenol, 3(4)-Methylphenol, Hexachloroethane, Nitrobenzene, Hexachlorobutadiene, 2,4-Dichlorophenol, 2,4-Dinitrotoluene, and Hexachlorobenzene in the matrix spiked extract of this sample. Five of six surrogate compounds failed to meet established criteria in the unspiked as well as the matrix spiked extract of this sample. The surrogates that failed were, 2-Fluorophenol, Phenol-d5, Nitrobenzene-d5, 2-Fluorobiphenyl, and Terphenyl-d14.

Compounds that exhibited less than 10% recovery in the matrix spike sample were not reported for this sample. These were, Hexachloroethane, Nitrobenzene, Hexachlorobutadiene, and 2,4-Dinitrotoluene. Compounds with greater than 10% recovery, but still below established criteria were reported as estimated sample quantitation limits. These compounds were, 2-Methylphenol, 3(4)-Methylphenol, 2,4,6-Trichlorophenol, and Hexachlorobenzene.

18 non-target compounds were detected. These compounds were searched against a mass spectral library. The matches obtained through this search were then either accepted or the compound was labeled as an unknown. A quantitation estimate was then made. The ANALIS LIMS system does not provide an adequate format for reporting this number of TICs, many of which were unknowns and should be reported with mass spectral data for the closest matches. The largest concentration estimate was for a TIC identified as molecular sulfur at 5000 ug/L. All other TIC information can be provided in standard laboratory format upon request.

SW846-9020A

Sample VER35685001 was analyzed by directly injecting sample into the pyrolysis system. This was done following "PROPOSED TEST METHOD FOR TOTAL CHLORINE IN USE. . . OXIDATIVE COMBUSTION AND MICROCOULOMETRY". This procedure was obtained from the instrument manufacturer and will be included with the data package.

I Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Flagging "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960206-023
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: C. J. Van Meter

Customer Sample ID: VER35685001
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 20209
Date Sample Received: 6-FEB-1996
Date Sampled: 5-FEB-1996

RCRA_SEMIVOLATILES

Date Extracted/Prepared: 12-FEB-1996
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 23-FEB-1996
QA File Number: 96160223B01
Dilution Factor: 1.0
Analyst: BD FUHR

CAS		ug/L	CAS		ug/L
95-48-7	2-Methylphenol	11UJ			
108-39-4	m-Cresol	11UJ			
106-44-5	4-Methylphenol	11UJ			
87-86-5	Pentachlorophenol	22U			
95-95-4	2,4,5-Trichlorophenol	11U			
88-06-2	2,4,6-Trichlorophenol	11UJ			
	Total Cresol	NA			
106-46-7	1,4-Dichlorobenzene	11U			
121-14-2	2,4-Dinitrotoluene	NR			
118-74-1	Hexachlorobenzene	11UJ			
	Hexachloro-1,3-butadiene	NR			
67-72-1	Hexachloroethane	NR			
98-95-3	Nitrobenzene	NR			
110-86-1	Pyridine				

ANALYSIS DATA REPORT

AnalIS ID: 960206-023
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: C. J. Van Meter

Customer Sample ID: VER35685001
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 20209
Date Sample Received: 6-FEB-1996
Date Sampled: 5-FEB-1996

RCRA_VOLATILES

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 8-FEB-1996
QA File Number: 96160208A3
Dilution Factor: 1.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
71-43-2	Benzene	2U			
56-23-5	Carbon Tetrachloride	2U			
108-90-7	Chlorobenzene	2U			
67-66-3	Chloroform	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	2U			
78-93-3	2-Butanone	100U			
127-18-4	Tetrachloroethene	2U			
79-01-6	Trichloroethene	2U			
75-01-4	Vinyl Chloride	1U			

Waste Stream Number: Cascade-10

Waste Stream Title: Trap Material

Table 1. Summary Statistics for All Analysis in the 1998 X-744G-06 Data Set (p. 1 of 3)

Analysis	Units	No. Results	- Analytical		Nondetections -		----- Analytical Detections -----					Reg. Limit
			No.	#Lim	Low	High	No.	Min	Mean	Max	St. Dev.	
PHYSICAL PROPERTIES												
Free Liquids	P/F	3	3	1	Pass	Pass	0	.	.	.	.	.
Moisture	%	3	0	0	.	.	3	0.5	1.133333	1.6	0.5686241	.
pH	pH units	3	0	0	.	.	3	4.4	4.523333	4.71	0.1644182	.
METALS												
Aluminum	ug/g	3	0	0	.	.	3	128000	213333.3	279000	77397.244	.
Antimony	ug/g	3	3	2	16.4	16.9	0	.	.	.	.	.
Arsenic	ug/g	3	3	2	17.7	18.2	0	.	.	.	.	.
Arsenic (TCLP)	mg/L	20	13	1	0.187	0.187	7	0.187	0.438429	0.778	0.2272663	5
Barium	ug/g	3	0	0	.	.	3	7.5	32.63333	66.8	30.664692	.
Barium (TCLP)	mg/L	20	0	0	.	.	20	0.037	0.90345	11.7	2.5643814	100
Beryllium	ug/g	3	2	1	0.83	0.83	1	1.5	1.5	1.5	.	.
Cadmium	ug/g	3	3	1	1.4	1.4	0	.	.	.	.	.
Cadmium (TCLP)	mg/L	20	15	1	0.014	0.014	5	0.0144	0.02008	0.028	0.0055975	1
Calcium	ug/g	3	0	0	.	.	3	229	305	405	90.421236	.
Chromium	ug/g	3	3	1	2.3	2.3	0	.	.	.	.	.
Chromium (TCLP)	mg/L	20	15	2	0.024	0.24	5	0.024	0.1282	0.304	0.1048389	5
Cobalt	ug/g	3	3	1	2.6	2.6	0	.	.	.	.	.
Copper	ug/g	3	3	2	2.4	2.5	0	.	.	.	.	.
Copper (TCLP)	mg/L	20	3	1	0.026	0.026	17	0.048	0.611647	7.92	1.8951796	.
Iron	ug/g	3	0	0	.	.	3	45.7	63.8	85.6	20.205692	.
Lead	ug/g	3	1	1	13.8	13.8	2	34.1	43.05	52	12.657211	.
Lead (TCLP)	mg/L	20	7	1	0.142	0.142	13	0.213	0.998692	3.89	1.0013889	5
Lithium	ug/g	3	0	0	.	.	3	4.2	7.533333	12.3	4.2359572	.
Magnesium	ug/g	3	0	0	.	.	3	65.9	76.03333	91.3	13.455606	.
Manganese	ug/g	3	0	0	.	.	3	66	112	148	41.904654	.
Mercury	ug/g	3	2	2	0.024	0.025	1	8.62	8.62	8.62	.	.
Mercury (TCLP)	mg/L	20	17	1	0.01	0.01	3	0.01	0.187333	0.4	0.1973863	0.2
Nickel	ug/g	3	3	2	4.9	5	0	.	.	.	.	.
Potassium	ug/g	3	3	2	313	322	0	.	.	.	.	.
Selenium	ug/g	3	3	2	27.1	27.9	0	.	.	.	.	.
Selenium (TCLP)	mg/L	20	14	1	0.287	0.287	6	0.287	0.3625	0.512	0.089234	1
Silver	ug/g	3	0	0	.	.	3	2.4	4.8	6.9	2.2649503	.
Silver (TCLP)	mg/L	20	14	1	0.04	0.04	6	0.04	0.071667	0.126	0.0350638	5
Sodium	ug/g	3	0	0	.	.	3	1980	4193.333	6740	2397.4431	.
Thallium	ug/g	3	2	2	22.9	23.6	1	35.5	35.5	35.5	.	.
Titanium	ug/g	3	0	0	.	.	3	42.2	60.73333	75.3	16.902761	.
Vanadium	ug/g	3	3	1	1.9	1.9	0	.	.	.	.	.
Zinc	ug/g	3	0	0	.	.	3	46.6	69.26667	102	29.039513	.
Zinc (TCLP)	mg/L	20	0	0	.	.	20	0.192	1.8096	23.4	5.0966198	.
INORGANICS												
Reactive Cyanide	ug/g	3	3	1	1	1	0	.	.	.	.	.
Reactive Sulfide	ug/g	3	3	1	75	75	0	.	.	.	.	.
ORGANICS												
Total Organic Carbon (TOC)	ug/g	3	1	1	300	300	2	410	855	1300	629.32504	.
Total Organic Halides (TOX)	ug/g	3	2	1	10	10	1	57	57	57	.	.
PCBs												
PCB (Total)	ug/g	3	3	1	0.5	0.5	0	.	.	.	.	.

Table 1. Summary Statistics for All Analysis in the 1998 X-744G-06 Data Set (p. 2 of 3)

Analysis	Units	No. Results	- Analytical Nondetections -				Analytical Detections					Reg. Limit
			No.	#Lim	Low	High	No.	Min	Mean	Max	St. Dev.	
RADIOLOGICAL												
Alpha activity	pCi/g	3	0	0	.	.	3	55119	251384.3	439951	192531.48	.
Beta activity	pCi/g	3	0	0	.	.	3	72430	110901	162608	46523.238	.
Uranium (alpha)	ug/g	3	0	0	.	.	3	120782	175771	250554	67112.181	.
Uranium-232 (alpha)	pCi/g	3	3	3	11	614	0	.	.	.	.	.
Uranium-234 (alpha)	pCi/g	3	0	0	.	.	3	29700	235966.7	462700	217224.34	.
Uranium-235 (alpha)	pCi/g	3	0	0	.	.	3	1643	9481	16360	7405.22	.
Uranium-235 (gamma)	pCi/g	3	0	0	.	.	3	1409	5806.333	11610	5243.8946	.
Uranium-236 (alpha)	pCi/g	3	2	2	108	365	1	571	571	571	.	.
Uranium-238 (alpha)	pCi/g	3	0	0	.	.	3	40330	57576.67	82560	22152.545	.
Uranium-235 (Davies/Gray)	g/g	3	0	0	.	.	3	0.1198	0.1657	0.2474	0.0709343	.
% Uranium-235 (gamma)	Wt%	3	0	0	.	.	3	0.684	2.454667	5.06	2.3043102	.
Actinium-228 (gamma)	pCi/g	2	2	2	1.27	1.67	0	.	.	.	.	.
Americium-241 (alpha)	pCi/g	3	2	2	0.065	0.091	1	0.045	0.045	0.045	.	.
Americium-242 (alpha)	pCi/g	3	3	3	0.015	0.064	0	.	.	.	.	.
Americium-243 (alpha)	pCi/g	3	3	3	0.015	0.064	0	.	.	.	.	.
Antimony-125 (gamma)	pCi/g	2	2	2	1.88	2.4	0	.	.	.	.	.
Bismuth-212 (gamma)	pCi/g	2	2	2	4.52	5.67	0	.	.	.	.	.
Bismuth-214 (gamma)	pCi/g	2	2	2	1.16	1.44	0	.	.	.	.	.
Cerium-141 (gamma)	pCi/g	2	2	2	2.59	8.45	0	.	.	.	.	.
Cerium-144 (gamma)	pCi/g	2	2	2	8.77	21.9	0	.	.	.	.	.
Cesium-134 (gamma)	pCi/g	2	2	2	0.54	0.69	0	.	.	.	.	.
Cesium-137 (gamma)	pCi/g	2	2	2	0.62	0.77	0	.	.	.	.	.
Lead-212 (gamma)	pCi/g	2	2	2	1.64	2.98	0	.	.	.	.	.
Lead-214 (gamma)	pCi/g	2	2	2	3.38	5.68	0	.	.	.	.	.
Neptunium-237 (alpha)	pCi/g	3	1	1	0.098	0.098	2	0.68	0.7	0.72	0.0282843	.
Niobium-95 (gamma)	pCi/g	2	2	2	0.57	0.73	0	.	.	.	.	.
Plutonium-238 (alpha)	pCi/g	3	3	3	0.02	0.064	0	.	.	.	.	.
Plutonium-239/240 (alpha)	pCi/g	3	3	3	0.019	0.072	0	.	.	.	.	.
Plutonium-242 (alpha)	pCi/g	3	3	3	0.019	0.057	0	.	.	.	.	.
Plutonium-244 (alpha)	pCi/g	3	3	3	0.02	0.074	0	.	.	.	.	.
Potassium-40 (gamma)	pCi/g	3	0	0	.	.	3	5.17	6.786667	9.78	2.5950787	.
Protactinium-231 (gamma)	pCi/g	2	2	2	27.3	43.8	0	.	.	.	.	.
Protactinium-234m (gamma)	pCi/g	3	0	0	.	.	3	65400	82110	106400	21525.387	.
Radium-224 (gamma)	pCi/g	2	2	2	18	32.3	0	.	.	.	.	.
Radium-226 (gamma)	pCi/g	3	1	1	3.38	3.38	2	6.56	7.285	8.01	1.0253048	.
Radium-228 (gamma)	pCi/g	2	2	2	1.27	1.67	0	.	.	.	.	.
Ruthenium-103 (gamma)	pCi/g	2	2	2	0.64	0.8	0	.	.	.	.	.
Ruthenium-106 (gamma)	pCi/g	2	2	2	5.37	6.66	0	.	.	.	.	.
Technetium-99	pCi/g	3	1	1	154	154	2	2121	2477	2833	503.46003	.
Thallium-208 (gamma)	pCi/g	3	2	2	0.63	0.8	1	0.83	0.83	0.83	.	.
Thorium-228 (alpha)	pCi/g	3	1	1	0.22	0.22	2	1.6	1.7	1.8	0.1414214	.
Thorium-230 (alpha)	pCi/g	3	0	0	.	.	3	4.4	14.46667	22	9.0693623	.
Thorium-231 (alpha)	pCi/g	1	0	0	.	.	1	10440	10440	10440	.	.
Thorium-231 (gamma)	pCi/g	2	0	0	.	.	2	1268	4058	6848	3945.6558	.
Thorium-232 (alpha)	pCi/g	3	2	2	0.085	0.099	1	0.059	0.059	0.059	.	.
Thorium-234 (alpha)	pCi/g	1	0	0	.	.	1	82560	82560	82560	.	.
Thorium-234 (gamma)	pCi/g	2	0	0	.	.	2	12300	13645	14990	1902.1172	.
Zirconium-95 (gamma)	pCi/g	2	2	2	1.21	1.51	0	.	.	.	.	.

Table 1 (Continued). Notes for Summary Statistics (p. 3 of 3)

1. There are forty-five containers of X-744G-06 trap material, including eight 55-gallon drums and thirty-seven "F-cans" (volume of approximately 0.3 cubic feet), and three Material Codes: 223, 224, and 225. Twenty containers were sampled. The distributions of the types of containers and material codes in the sub-population and in the sample (n=) are given in the following table.

Material Code	F-can	55 gal. Drum	Total Containers
223	6 / n=3	3 / n=2	9 / n=5
224	22 / n=9	4 / n=2	26 / n=11
225	9 / n=4	1 / n=0	10 / n=4
Total Containers	37 / n=16	8 / n=4	45 / n=20

2. A drum sample is the composite of four core samples from a drum. An F-can sample is the composite of several scoop samples from the top of a can.
2. The column "No. Results" is the number of containers sampled. None of the containers were sampled in duplicate.
3. The column "#Lim" is the number of distinct analytical detection limits. "Low" and "High" show the lowest and highest detection limits.
4. "Min," "Max," "Mean," and "St. Dev." are the minimum, maximum, mean, and standard deviation of the detected results.
5. The regulatory limits are the Toxicity Characteristics, D004-D0043. They were provided by Betchel Jacobs Waste Management personnel at Portsmouth.
6. The samples were analyzed by the Portsmouth Lockheed Martin Uranium Services Laboratory.

Table 2. Summary Statistics for All Analy. in the 1998 X-744G-06 Data Set (p. 1 of 2)
Where There Is At Least One Detected Result

Analysis	Units	No. Results	- Analytical Nondetections -				Analytical Detections					TCLP Limit
			No.	#Lim	Low	High	No.	Min	Mean	Max	St. Dev.	
PHYSICAL PROPERTIES												
Moisture	%	3	0	0	.	.	3	0.5	1.133333	1.6	0.5686241	.
pH	pH units	3	0	0	.	.	3	4.4	4.523333	4.71	0.1644182	.
METALS												
Aluminum	ug/g	3	0	0	.	.	3	128000	213333.3	279000	77397.244	.
Arsenic (TCLP)	mg/L	20	13	1	0.187	0.187	7	0.187	0.438429	0.778	0.2272663	5
Barium	ug/g	3	0	0	.	.	3	7.5	32.63333	66.8	30.664692	.
Barium (TCLP)	mg/L	20	0	0	.	.	20	0.037	0.90345	11.7	2.5643814	100
Beryllium	ug/g	3	2	1	0.83	0.83	1	1.5	1.5	1.5	.	.
Cadmium (TCLP)	mg/L	20	15	1	0.014	0.014	5	0.0144	0.02008	0.028	0.0055975	1
Calcium	ug/g	3	0	0	.	.	3	229	305	405	90.421236	.
Chromium (TCLP)	mg/L	20	15	2	0.024	0.24	5	0.024	0.1282	0.304	0.1048389	5
Copper (TCLP)	mg/L	20	3	1	0.026	0.026	17	0.048	0.611647	7.92	1.8951796	.
Iron	ug/g	3	0	0	.	.	3	45.7	63.8	85.6	20.205692	.
Lead	ug/g	3	1	1	13.8	13.8	2	34.1	43.05	52	12.657211	.
Lead (TCLP)	mg/L	20	7	1	0.142	0.142	13	0.213	0.998692	3.89	1.0013889	5
Lithium	ug/g	3	0	0	.	.	3	4.2	7.533333	12.3	4.2359572	.
Magnesium	ug/g	3	0	0	.	.	3	65.9	76.03333	91.3	13.455606	.
Manganese	ug/g	3	0	0	.	.	3	66	112	148	41.904654	.
Mercury	ug/g	3	2	2	0.024	0.025	1	8.62	8.62	8.62	.	.
Mercury (TCLP)	mg/L	20	17	1	0.01	0.01	3	0.01	0.187333	0.4	0.1973863	0.2
Selenium (TCLP)	mg/L	20	14	1	0.287	0.287	6	0.287	0.3625	0.512	0.089234	1
Silver	ug/g	3	0	0	.	.	3	2.4	4.8	6.9	2.2649503	.
Silver (TCLP)	mg/L	20	14	1	0.04	0.04	6	0.04	0.071667	0.126	0.0350638	5
Sodium	ug/g	3	0	0	.	.	3	1980	4193.333	6740	2397.4431	.
Thallium	ug/g	3	2	2	22.9	23.6	1	35.5	35.5	35.5	.	.
Titanium	ug/g	3	0	0	.	.	3	42.2	60.73333	75.3	16.902761	.
Zinc	ug/g	3	0	0	.	.	3	46.6	69.26667	102	29.039513	.
Zinc (TCLP)	mg/L	20	0	0	.	.	20	0.192	1.8096	23.4	5.0966198	.
ORGANICS												
Total Organic Carbon (TOC)	ug/g	3	1	1	300	300	2	410	855	1300	629.32504	.
Total Organic Halides (TOX)	ug/g	3	2	1	10	10	1	57	57	57	.	.
RADIOLOGICAL												
Alpha activity	pCi/g	3	0	0	.	.	3	55119	251384.3	439951	192531.48	.
Beta activity	pCi/g	3	0	0	.	.	3	72430	110901	162608	46523.238	.
Uranium (alpha)	ug/g	3	0	0	.	.	3	120782	175771	250554	67112.181	.
Uranium-234 (alpha)	pCi/g	3	0	0	.	.	3	29700	235966.7	462700	217224.34	.
Uranium-235 (alpha)	pCi/g	3	0	0	.	.	3	1643	9481	16360	7405.22	.
Uranium-235 (gamma)	pCi/g	3	0	0	.	.	3	1409	5806.333	11610	5243.8946	.
Uranium-236 (alpha)	pCi/g	3	2	2	108	365	1	571	571	571	.	.
Uranium-238 (alpha)	pCi/g	3	0	0	.	.	3	40330	57576.67	82560	22152.545	.
Uranium-235 (Davies/Gray)	g/g	3	0	0	.	.	3	0.1198	0.1657	0.2474	0.0709343	.
% Uranium-235 (gamma)	Wt%	3	0	0	.	.	3	0.684	2.454667	5.06	2.3043102	.
Americium-241 (alpha)	pCi/g	3	2	2	0.065	0.091	1	0.045	0.045	0.045	.	.
Neptunium-237 (alpha)	pCi/g	3	1	1	0.098	0.098	2	0.68	0.7	0.72	0.0282843	.
Potassium-40 (gamma)	pCi/g	3	0	0	.	.	3	5.17	6.786667	9.78	2.5950787	.
Protactinium-234m (gamma)	pCi/g	3	0	0	.	.	3	65400	82110	106400	21525.387	.
Ra 226 (gamma)	pCi/g	3	1	1	3.3	3.38	2	6.56	7.285	8.01	1.0253048	.

Table 2. Summary Statistics for All Analyses in the 1998 X-744G-06 Data Set (p. 2 of 2)
Where There Is At Least One Detected Result

Analysis	Units	No. Results	- Analytical Nondetections -				----- Analytical Detections -----					TCLP Limit
			No.	#Lim	Low	High	No.	Min	Mean	Max	St. Dev.	
Technetium-99	pCi/g	3	1	1	154	154	2	2121	2477	2833	503.46003	.
Thallium-208 (gamma)	pCi/g	3	2	2	0.63	0.8	1	0.83	0.83	0.83	.	.
Thorium-228 (alpha)	pCi/g	3	1	1	0.22	0.22	2	1.6	1.7	1.8	0.1414214	.
Thorium-230 (alpha)	pCi/g	3	0	0	.	.	3	4.4	14.46667	22	9.0693623	.
Thorium-231 (alpha)	pCi/g	1	0	0	.	.	1	10440	10440	10440	.	.
Thorium-231 (gamma)	pCi/g	2	0	0	.	.	2	1268	4058	6848	3945.6558	.
Thorium-232 (alpha)	pCi/g	3	2	2	0.085	0.099	1	0.059	0.059	0.059	.	.
Thorium-234 (alpha)	pCi/g	1	0	0	.	.	1	82560	82560	82560	.	.
Thorium-234 (gamma)	pCi/g	2	0	0	.	.	2	12300	13645	14990	1902.1172	.

Please see the notes for Table 1.

Table 2a. Summary Statistics for All Analytes in the 1998 X-744G-06 Data Set (p. 1 of 1)
Where There Is a TCLP Limit

Analysis	Units	No. Results	- Analytical Nondetections -				----- Analytical Detections -----					TCLP Limit
			No.	#Lim	Low	High	No.	Min	Mean	Max	St. Dev.	
<u>METALS</u>												
Arsenic (TCLP)	mg/L	20	13	1	0.187	0.187	7	0.187	0.438429	0.778	0.2272663	5
Barium (TCLP)	mg/L	20	0	0	.	.	20	0.037	0.90345	11.7	2.5643814	100
Cadmium (TCLP)	mg/L	20	15	1	0.014	0.014	5	0.0144	0.02008	0.028	0.0055975	1
Chromium (TCLP)	mg/L	20	15	2	0.024	0.24	5	0.024	0.1282	0.304	0.1048389	5
Lead (TCLP)	mg/L	20	7	1	0.142	0.142	13	0.213	0.998692	3.89	1.0013889	5
Mercury (TCLP)	mg/L	20	17	1	0.01	0.01	3	0.01	0.187333	0.4	0.1973863	0.2
Selenium (TCLP)	mg/L	20	14	1	0.287	0.287	6	0.287	0.3625	0.512	0.089234	1
Silver (TCLP)	mg/L	20	14	1	0.04	0.04	6	0.04	0.071667	0.126	0.0350638	5

Please see the notes for Table 1.

Table 3. Summary of SW-846 Upper Confidence Bounds and Statistical Testing on 1998 X-744G-06 Data Set (p. 1 of 2)

Analysis	Units	Statistical Distribution	No. Res.	No. Det's	Data Min	Data Max	"Max Mean"	"Max Std Error"	SW-846 90% UCB: Mean _{max} + t*SE _{max}	Approx. # SE _{max} < Limit	90% UCB: Alt. Stat Method	TCLP Limit	Statistical Conclusion
Arsenic (TCLP)	mg/L	Insuf Detects	20	7	0.187	0.778	0.275	0.0558	0.3491	84.63	.	5	Nonhazardous
Barium (TCLP)	mg/L	Lognormal	20	20	0.037	11.7	0.9035	0.5734	1.6648	172.8	1.2697	100	Nonhazardous
Cadmium (TCLP)	mg/L	Insuf Detects	20	5	0.014	0.028	0.0155	0.0021	0.0183	474.3	.	1	Nonhazardous
Chromium (TCLP)	mg/L	Insuf Detects	20	5	0.024	0.304	0.0609	0.0176	0.0842	280.6	.	5	Nonhazardous
Lead (TCLP)	mg/L	Unknown	20	13	0.142	3.89	0.6989	0.2088	0.9761	20.6	1.0341	5	Nonhazardous
Mercury (TCLP)	mg/L	Insuf Detects	20	3	0.01	0.4	0.0366	0.021	0.0645	7.785	0.0783	0.2	Nonhazardous
Selenium (TCLP)	mg/L	Insuf Detects	20	6	0.287	0.512	0.3097	0.0395	0.362	17.49	0.2506	1	Nonhazardous
Silver (TCLP)	mg/L	Insuf Detects	20	6	0.04	0.126	0.0495	0.0085	0.0608	579.6	.	5	Nonhazardous

Notes:

1. 90% upper confidence bounds were calculated from results from twenty different containers. None of the containers were sampled in duplicate. No modification was made for the different types of containers or different material codes.

2. Statistical Conclusions:

Nonhazardous - By the principles and guidelines of SW-846, the upper 90% confidence bound on the mean is less than the regulatory limit.

Hazardous - By the principles and guidelines of SW-846, the upper 90% confidence bound on the mean is greater than the regulatory limit.

3. Statistical distributions and data transformations were examined. The original results were statistically tested for agreement with a normal distribution using the Shapiro-Wilk test (please see the histograms, Figures 1-20). If the results failed normality, they were transformed using the logarithm, square root, cubed root, reciprocal, and the reciprocal of the squared and cubed results, and the reciprocal of the square root and cubed root. The transformed results were tested for normality.

Normal - The analytical results pass a statistical test for following a normal distribution. An exact 90% upper confidence bound on the mean can be based on the t-statistic and calculated from expressions in SW-846.

Lognormal - The logarithm of the results pass a statistical test for following a normal distribution. An exact 90% upper confidence bound on the mean can be calculated from expressions derived from the lognormal distribution.

Unknown - No "simple" mathematical transformation could be found that yielded transformed results that pass the statistical test for following a normal distribution. However, the central limit theorem (CLT) of statistics says that data averages tend to have a normal distribution, regardless of the underlying distribution of the results. By the CLT, a t-based, approximate 90% upper confidence bound can be calculated for unknown distributions.

Insuf Detects - There are an insufficient number of analytical detections to reliably evaluate the underlying statistical distribution. Conservatively high estimates of the mean and standard deviation are used. The t-based UCB provides an approximate 90% bound. Please see notes 6-8.

4. "No. Res" is the number of analytical results. "No. Det's" is the number of analytical detections.

5. "Data Min" and "Data Max" are the minimum and maximum results. The minimum and maximum results are not labeled as detected or nondetected. Detected min and max, and nondetected min and max are given in Table 1.

Table 3 (continued). Notes for Summary of SW-846 Statistical Testing (p. 2 of 2)

6. The "Max Mean" was determined by averaging over the detected results and the detection limits. As a result, "Max Mean" conservatively overestimates the true population mean.
7. The "Max Standard Error" approximates the variability of the mean. It is the "maximum standard deviation" divided by the square root of the number of results. The "maximum standard deviation" is the larger of either (a) the standard deviation of the results, as reported by the lab, or (b) the standard deviation of the results with zeros substituted for the nondetected results. As a result, "max standard deviation" and "max standard error" conservatively overestimate the true population standard deviations.
8. $\text{Mean}_{\text{max}} + t_c \cdot \text{SE}_{\text{max}}$ is a conservatively high approximation of the SW-846 90% upper confidence bound on the population mean, where Mean_{max} is "Max Mean," SE_{max} is "Max Standard Error of the Mean," and t_c is the upper .90th quantile of the t-distribution with n-1 degrees of freedom. For n=20, there are 19 degrees of freedom, and $t_c=1.328$. By SW-846, chapter 9, if $\text{Mean}_{\text{max}} + t_c \cdot \text{SE}_{\text{max}}$ is less than the regulatory limit, the chemical contaminant is considered not present in the waste at a hazardous concentration.
9. The "Approx. No. $\text{SE}_{\text{max}} < \text{Limit}$ " is an approximate number of standard errors of the mean that "Max Mean" is less than the limit. This number must be greater than $t=1.328$ for n=20 for the contaminant to be found "nonhazardous." The larger "No. of $\text{SE}_{\text{max}} < \text{Limit}$ " is, the less likely that the contaminant is present at a hazardous level. Because these numbers are so much greater than 1.328, the effects non-normality and the presence of nondetected results are of less concern. Please see Technical Note 1 in the memo.
10. "90% UCB: Alternative Statistical Methods" are UCBs calculated by methods other than the t-based, SW-846, UCB calculation. The t-based UCB is the exact calculation when the results have a normal distribution. The following statistical methods were used to calculate the "alternative" 90% UCBs:
 - When the logarithms of the results pass a test for following a normal distribution, the alternative UCB is from an exact calculation derived from the lognormal distribution (please see note 11 below). This exact calculation is more accurate than the t-based calculation when the underlying distribution is lognormal.
 - When the underlying statistical distribution of the results could not be determined or there are an insufficient number of detected results, a nonparametric "bootstrap" method was used to estimate a 90% UCB on the mean. The BC_a ("bias-corrected and accelerated") bootstrap upper confidence bounds were calculated (please see 12 below). If the randomly selected result was an analytical nondetection, a uniformly distributed result between zero and the DL was generated. There were 1,000,000 "re-samples" used in a bootstrapping calculation.
11. "Lognormal 90% UCB" gives the exact calculation for a 90% upper confidence bound on the mean when the results have a lognormal distribution. The equation is given by R. O. Gilbert, in *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold Co., chapter 13, pp. 169-171, 1987.
12. The BC_a bootstrapped approximate 90% upper confidence bound is a nonparametric calculation. It does not require the underlying distribution to be known. The BC_a method is described in "Better Bootstrap Confidence Intervals," by Bradley Efron, Vol. 82, 1987, of the *Journal of the American Statistical Association*, pp. 171-185, and in *An Introduction to the Bootstrap* by Bradley Efron and Robert J. Tibshirani, Chapman & Hall, New York, 1993, pp 185-186. Please see Technical Note 2 in the memo.
13. The regulatory limits are the Toxicity Characteristics, D004-D043. They have the same measurement units as the analyses (mg/L).
14. A 90% UCB for TCLP Barium was also calculated by the BC_a bootstrap method. Bootstrapping gave an UCB of 2.1097. This is higher than the lognormal UCB of 1.2697, and closer to the t-based UCB of 1.6648. This is likely due to highly skewed distribution. The logarithms of the results are only "marginally" normal and the lognormal distribution may not adequately fit the upper tail of the data distribution. Of the three UCBs, the bootstrapped UCB is probably the most reliable. Regardless, all three are well under the TCLP limit of 100.

Table 4. A List of All Results in the 1998 X-744G-06 Data Set That Exceed a TCLP Limit

Analysis	Units	Sample ID	Type of Result	n	Result	TCLP Limit (mg/L)
Mercury (TCLP)	mg/L	F000960X744G06	Detection	1	0.4	0.2

Notes:

1. This is a complete listing of all individual analytical results, detected and nondetected, that exceed a TCLP limit.
2. TCLP Mercury passes the SW-846 statistical test. Please see Table 3.

Table 5. 1998 Data from Samples of 4G-06 LEU Trap Material (p. 1 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Free Liquids	Pass		P/F	980203-102	22225548X744G06	07MAR98	27FEB98	SW846-9095
Free Liquids	Pass		P/F	980128-066	F000960X744G06	06MAR98	27FEB98	SW846-9095
Free Liquids	Pass		P/F	980130-026	F005392X744G06	07MAR98	27FEB98	SW846-9095
Moisture	0.5		%	980203-102	22225548X744G06	07MAR98	25FEB98	ASTM-D2216
Moisture	1.3		%	980128-066	F000960X744G06	06MAR98	25FEB98	ASTM-D2216
Moisture	1.6		%	980130-026	F005392X744G06	07MAR98	25FEB98	ASTM-D2216
pH	4.4		pH units	980203-102	22225548X744G06	07MAR98	17FEB98	SW846-9045C
pH	4.46		pH units	980128-066	F000960X744G06	06MAR98	17FEB98	SW846-9045C
pH	4.71		pH units	980130-026	F005392X744G06	07MAR98	17FEB98	SW846-9045C
Aluminum	128000		ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Aluminum	233000		ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Aluminum	279000		ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Antimony	16.4	UN	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Antimony	16.4	UN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Antimony	16.9	UN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Arsenic	17.7	UN	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Arsenic	17.7	UN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Arsenic	18.2	UN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Arsenic (TCLP)	0.187		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Arsenic (TCLP)	0.462	B	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/6010-2
Arsenic (TCLP)	0.687	B*	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.443	B	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.291	B	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Arsenic (TCLP)	0.778	B	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.187	U	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Arsenic (TCLP)	0.221	B	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Barium	7.5	B	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Barium	23.6	B	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Barium	66.8	B	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Barium (TCLP)	11.7		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Barium (TCLP)	0.099	B	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/6010-2
Barium (TCLP)	0.037	B	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.068	B	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/6010-2
Barium (TCLP)	1.31		mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.09	B	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.484		mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.947		mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.325	B	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.285	B	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2

Table 5. 1998 Data from Samples of .G-06 LEU Trap Material (p. 2 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Barium (TCLP)	0.088	B	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.057	B	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.099	B	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.418	B	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.145	B	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.098	B	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.152	B	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Barium (TCLP)	0.373	B	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.866		mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Barium (TCLP)	0.428	B	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Beryllium	0.83	U	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Beryllium	0.83	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Beryllium	1.5	B	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Cadmium	1.4	U	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Cadmium	1.4	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Cadmium	1.4	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Cadmium (TCLP)	0.0144		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Cadmium (TCLP)	0.022	B	mg/L	980204-014	2225540X744G06	10MAR98	10MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980203-102	2225548X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.015	B	mg/L	980204-015	2225553X744G06	10MAR98	10MAR98	1311/6010-2
Cadmium (TCLP)	0.021	B	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.028	B	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Cadmium (TCLP)	0.014	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Calcium	229	B	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Calcium	405	B	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Calcium	281	B	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Chromium	2.3	U	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Chromium	2.3	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Chromium	2.3	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Chromium (TCLP)	0.024		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Chromium (TCLP)	0.024	U	mg/L	980204-014	2225540X744G06	10MAR98	10MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980203-102	2225548X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980204-015	2225553X744G06	10MAR98	10MAR98	1311/6010-2
Chromium (TCLP)	0.092	B	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.122	B	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.099	B	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2

Table 5. 1998 Data from Samples of 4G-06 LEU Trap Material (p. 3 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Chromium (TCLP)	0.24	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Chromium (TCLP)	0.304	B	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Chromium (TCLP)	0.024	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Cobalt	2.6	U	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Cobalt	2.6	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Cobalt	2.6	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Copper	2.4	U	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Copper	2.4	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Copper	2.5	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Copper (TCLP)	7.92		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Copper (TCLP)	0.114	B	mg/L	980204-014	2225540X744G06	10MAR98	10MAR98	1311/6010-2
Copper (TCLP)	0.337	B*	mg/L	980203-102	2225548X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.055	B	mg/L	980204-015	2225553X744G06	10MAR98	10MAR98	1311/6010-2
Copper (TCLP)	0.926		mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.026	U	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.091	B	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.212	B	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.121	BN	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.048	B	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.061	B	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.069	B	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.104	B	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.052	B	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.026	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.067	B	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.078	B	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Copper (TCLP)	0.052	B	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.091	B	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Copper (TCLP)	0.026	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Iron	60.1	BN	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Iron	85.6	BN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Iron	45.7	BN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Lead	52	BN	ug/g	980203-102	2225548X744G06	07MAR98	06MAR98	SW846-6010-5
Lead	34.1	BN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Lead	13.8	UN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Lead (TCLP)	1.89		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Lead (TCLP)	0.732	B	mg/L	980204-014	2225540X744G06	10MAR98	10MAR98	1311/6010-2
Lead (TCLP)	1.05	B	mg/L	980203-102	2225548X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	1.57	B	mg/L	980204-015	2225553X744G06	10MAR98	10MAR98	1311/6010-2
Lead (TCLP)	0.58	B	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.662	B	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	80129-001	F001568X744G06	04MAR98	04MAR98	1311/6010

Table 5. 1998 Data from Samples of 4G-06 LEU Trap Material (p. 4 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Lead (TCLP)	0.213	B	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.367	B	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.296	B	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.263	B	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.732	B	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Lead (TCLP)	0.738	B	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	3.89		mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Lead (TCLP)	0.142	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Lithium	6.1		ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Lithium	12.3		ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Lithium	4.2		ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Magnesium	70.9	B	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Magnesium	91.3	B	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Magnesium	65.9	B	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Manganese	66	BN	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Manganese	122	BN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Manganese	148	BN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Mercury	0.024	U	ug/g	980203-102	22225548X744G06	07MAR98	03MAR98	SW846-7470A
Mercury	8.62	W	ug/g	980128-066	F000960X744G06	06MAR98	03MAR98	SW846-7470A
Mercury	0.025	UN	ug/g	980130-026	F005392X744G06	07MAR98	03MAR98	SW846-7470A
Mercury (TCLP)	0.01		mg/L	X980980036	22006324X744G	30MAR98	20APR98	SW8467470A(TCLP)
Mercury (TCLP)	0.01	U	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/7470
Mercury (TCLP)	0.4	W	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.152		mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	UN	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/7470
Mercury (TCLP)	0.01	UN	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/7470
Mercury (TCLP)	0.01	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/7470
Nickel	4.9	U	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Nickel	4.9	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Nickel	5	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Potassium	313	U	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Potassium	313	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Potassium	322	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Selenium	27.1	UN	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5

Table 5. 1998 Data from Samples of , .G-06 LEU Trap Material (p. 5 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Selenium	27.1	UN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SWB46-6010-5
Selenium	27.9	UN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SWB46-6010-5
Selenium (TCLP)	0.287		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SWB466010A(TCLP)
Selenium (TCLP)	0.287	U	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/6010-2
Selenium (TCLP)	0.296	B	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.385	B	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN*	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.291	BN	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN*	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.404	BN	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.512	B	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN*	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	UN*	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Selenium (TCLP)	0.287	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Silver	2.4	N	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SWB46-7760A
Silver	6.9	N	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SWB46-7760A
Silver	5.1	N	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SWB46-7760A
Silver (TCLP)	0.126		mg/L	X980980036	22006324X744G	30MAR98	08MAY98	SWB467760A(TCLP)
Silver (TCLP)	0.04	UN*	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.04	N*	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/7760A
Silver (TCLP)	0.04	U	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.096		mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	U	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.044	N*	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.044	N*	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.04	UN*	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.08	N*	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/7760A
Silver (TCLP)	0.04	U	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	U	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/7760A
Silver (TCLP)	0.04	U	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/7760A
Sodium	1980	B	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SWB46-6010-5
Sodium	6740	B	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SWB46-6010-5
Sodium	3860	B	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SWB46-6010-5
Thallium	35.5	B	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SWB46-6010-5
Thallium	22.9	U	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SWB46-6010-5
Thallium	23.6	U	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SWB46-6010-5

Table 5. 1998 Data from Samples of .G-06 LEU Trap Material (p. 6 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Titanium	64.7	*	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Titanium	75.3	*	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Titanium	42.2	*	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Vanadium	1.9	UN	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Vanadium	1.9	UN	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Vanadium	1.9	UN	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Zinc	46.6	BNJ	ug/g	980203-102	22225548X744G06	07MAR98	06MAR98	SW846-6010-5
Zinc	59.2	BNJ	ug/g	980128-066	F000960X744G06	06MAR98	06MAR98	SW846-6010-5
Zinc	102	BNJ	ug/g	980130-026	F005392X744G06	07MAR98	06MAR98	SW846-6010-5
Zinc (TCLP)	0.743		mg/L	X980980036	22006324X744G	30MAR98	30APR98	SW8466010A(TCLP)
Zinc (TCLP)	0.576	BJN	mg/L	980204-014	22225540X744G06	10MAR98	10MAR98	1311/6010-2
Zinc (TCLP)	23.4	J*	mg/L	980203-102	22225548X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.466	BJN	mg/L	980204-015	22225553X744G06	10MAR98	10MAR98	1311/6010-2
Zinc (TCLP)	0.994	BNJ	mg/L	980128-066	F000960X744G06	06MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.644	BNJ	mg/L	980129-004	F000967X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.339	BNJ	mg/L	980129-005	F000972X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	1.35	NJ	mg/L	980129-001	F001568X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.726	BNJ*	mg/L	980129-006	F002986X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.192	BJ	mg/L	980129-007	F003219X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.787	BNJ	mg/L	980130-027	F003592X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.524	BNJ	mg/L	980130-028	F003595X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.207	BJ	mg/L	980130-029	F004119X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.353	BJ	mg/L	980130-026	F005392X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.252	BJ	mg/L	980130-031	F005654X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.707	BJ	mg/L	980130-032	F005667X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	0.335	BJ	mg/L	980130-030	F005683X744G06	07MAR98	07MAR98	1311/6010-2
Zinc (TCLP)	1.62	NJ	mg/L	980129-003	F012672X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	0.717	BNJ	mg/L	980129-002	F991703X744G06	04MAR98	04MAR98	1311/6010-2
Zinc (TCLP)	1.26	BJ*	mg/L	980130-033	F995031X744G06	07MAR98	07MAR98	1311/6010-2
Reactive Cyanide	1	<NJ	ug/g	980203-102	22225548X744G06	07MAR98	23FEB98	SW846-9010A7
Reactive Cyanide	1	<J	ug/g	980128-066	F000960X744G06	06MAR98	23FEB98	SW846-9010A7
Reactive Cyanide	1	<J	ug/g	980130-026	F005392X744G06	07MAR98	23FEB98	SW846-9010A7
Reactive Sulfide	75	<J	ug/g	980203-102	22225548X744G06	07MAR98	23FEB98	SW846-9030A7
Reactive Sulfide	75	<NJ	ug/g	980128-066	F000960X744G06	06MAR98	23FEB98	SW846-9030A7
Reactive Sulfide	75	<J	ug/g	980130-026	F005392X744G06	07MAR98	23FEB98	SW846-9030A7
Total Organic Carbon (TOC)	410		ug/g	980203-102	22225548X744G06	07MAR98	03MAR98	SW846-9060
Total Organic Carbon (TOC)	300	U	ug/g	980128-066	F000960X744G06	06MAR98	03MAR98	SW846-9060
Total Organic Carbon (TOC)	1300		ug/g	980130-026	F005392X744G06	07MAR98	03MAR98	XP4TS-OA7031
Total Organic Halides (TOX)	57	B	ug/g	980203-102	22225548X744G06	07MAR98	03MAR98	XP4TS-OA7020
Total Organic Halides (TOX)	10	UB	ug/g	980128-066	F000960X744G06	06MAR98	03MAR98	XP4TS-OA7020
Total Organic Halides (TOX)	10	UB	ug/g	980130-026	F005392X744G06	07MAR98	03MAR98	XP4TS-OA7020
PCB (Total)	0.5	<	ug/g	980203-102	22225548X744G06	07MAR98	03MAR98	SW846-8081-2
PCB (Total)	0.5	<	ug/g	980128-066	F000960X744G06	06MAR98	03MAR98	SW846-8081-2
PCB (Total)	0.5	<	ug/g	980130-026	F005392X744G06	07MAR98	03MAR98	SW846-8081-2
Alpha activity	55119	J	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7280
Alpha activity	259083		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7280
Alpha activity	439951		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7280
Beta activity	72430		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7280
Beta activity	162608		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7280
Beta activity	97665		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7280
Uranium (alpha)	120782		ug/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710

Table 5. 1998 Data from Samples of G-06 LEU Trap Material (p. 8 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Lead-212 (gamma)	1.64	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Lead-212 (gamma)	2.98	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Lead-214 (gamma)	3.38	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Lead-214 (gamma)	5.68	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Neptunium-237 (alpha)	0.098	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710
Neptunium-237 (alpha)	0.68		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7710
Neptunium-237 (alpha)	0.72		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7710
Niobium-95 (gamma)	0.57	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Niobium-95 (gamma)	0.73	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Plutonium-238 (alpha)	0.064	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-238 (alpha)	0.021	<	pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7710
Plutonium-238 (alpha)	0.02	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-239/240 (alpha)	0.019	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-239/240 (alpha)	0.072	<	pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7710
Plutonium-239/240 (alpha)	0.02	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-242 (alpha)	0.019	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-242 (alpha)	0.057	<	pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7710
Plutonium-242 (alpha)	0.02	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-244 (alpha)	0.074	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7710
Plutonium-244 (alpha)	0.021	<	pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7710
Plutonium-244 (alpha)	0.02	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7710
Potassium-40 (gamma)	5.41		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Potassium-40 (gamma)	5.17		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7400
Potassium-40 (gamma)	9.78		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Protactinium-231 (gamma)	27.3	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Protactinium-231 (gamma)	43.8	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Protactinium-234m (gamma)	74530		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Protactinium-234m (gamma)	106400		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7400
Protactinium-234m (gamma)	65400		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-224 (gamma)	18	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-224 (gamma)	32.3	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-226 (gamma)	3.38	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-226 (gamma)	8.01		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7400
Radium-226 (gamma)	6.56		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-228 (gamma)	1.27	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Radium-228 (gamma)	1.67	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Ruthenium-103 (gamma)	0.64	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Ruthenium-103 (gamma)	0.8	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Ruthenium-106 (gamma)	5.37	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Ruthenium-106 (gamma)	6.66	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Technetium-99	154	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7385
Technetium-99	2121		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7385
Technetium-99	2833		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7385
Thallium-208 (gamma)	0.63	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Thallium-208 (gamma)	0.83		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7400
Thallium-208 (gamma)	0.8	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Thorium-228 (alpha)	0.22	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-228 (alpha)	1.6		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7650
Thorium-228 (alpha)	1.8		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-230 (alpha)	4.4		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-230 (alpha)	17		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7650

Table 5. 1998 Data from Samples of G-06 LEU Trap Material (p. 9 of 9)

Analysis	Result	Qualifier	Units	Laboratory ID	Sample ID	Date Complete	Date Sampled	Procedure
Thorium-230 (alpha)	22		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-231 (alpha)	10440		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7650
Thorium-231 (gamma)	1268		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Thorium-231 (gamma)	6848		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Thorium-232 (alpha)	0.099	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-232 (alpha)	0.059		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7650
Thorium-232 (alpha)	0.085	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7650
Thorium-234 (alpha)	82560		pCi/g	980128-066	F000960X744G06	06MAR98	04MAR98	XP4TS-RL7650
Thorium-234 (gamma)	12300		pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Thorium-234 (gamma)	14990		pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400
Zirconium-95 (gamma)	1.21	<	pCi/g	980203-102	22225548X744G06	07MAR98	04MAR98	XP4TS-RL7400
Zirconium-95 (gamma)	1.51	<	pCi/g	980130-026	F005392X744G06	07MAR98	04MAR98	XP4TS-RL7400

Waste Stream Number: 342-1

Waste Stream Title: Generator Scrap and Debris

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

342-1
USEC

AnaLIS ID: 960906-011 Project: ER 9567UE Requisition Number: 21690
Customer Sample ID: VER32130001 Customer: ENV RESTORATION
Date Sampled: 5-SEP-1996 13:15 Date Sample Received: 5-SEP-1996
Sampled By: M MCROBERTS Date Sample Completed: 2-OCT-1996
Material Description: X-342 CINDER BLOCK

** No comments were made for this sample. **
** See definition page for qualifiers/flags definitions.. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed
SW846-3050A	Sample Prep Metals	COMPLETE			ML STEWART	14-SEP-1996
SW846-6010A	Aluminum	1000B		mg/kg	TE SHOOK	14-SEP-1996
	Antimony	16.4U		mg/kg	TE SHOOK	14-SEP-1996
	Arsenic	55.3BN		mg/kg	TE SHOOK	14-SEP-1996
	Barium	3.8BN		mg/kg	TE SHOOK	14-SEP-1996
	Beryllium	1.0U		mg/kg	TE SHOOK	14-SEP-1996
	Cadmium	14.6BN		mg/kg	TE SHOOK	14-SEP-1996
	Calcium	525B		mg/kg	TE SHOOK	14-SEP-1996
	Chromium	411B		mg/kg	TE SHOOK	14-SEP-1996
	Cobalt	12.1BN		mg/kg	TE SHOOK	14-SEP-1996
	Copper	7510		mg/kg	TE SHOOK	14-SEP-1996
	Iron	59700B		mg/kg	TE SHOOK	14-SEP-1996
	Lead	71.8B		mg/kg	TE SHOOK	14-SEP-1996
	Magnesium	133B		mg/kg	TE SHOOK	14-SEP-1996
	Manganese	654B		mg/kg	TE SHOOK	14-SEP-1996
	Molybdenum	49.1BN		mg/kg	TE SHOOK	14-SEP-1996
	Nickel	164B		mg/kg	TE SHOOK	14-SEP-1996
	Potassium	43600*		mg/kg	TE SHOOK	14-SEP-1996
	Selenium	33.9UN		mg/kg	TE SHOOK	14-SEP-1996
	Silver	15.2BN*		mg/kg	TE SHOOK	14-SEP-1996
	Sodium	3190B		mg/kg	TE SHOOK	14-SEP-1996
	Thallium	74.3B		mg/kg	TE SHOOK	14-SEP-1996
	Vanadium	22.3BN		mg/kg	TE SHOOK	14-SEP-1996
	Zinc	1220B*		mg/kg	TE SHOOK	14-SEP-1996
TSD553-230	Gross Alpha	<4.2		pCi/mL	JP BREWSTER	25-SEP-1996
	Gross Beta	<9.5		pCi/mL	JP BREWSTER	25-SEP-1996
TSD553-385	Technetium	<0.6		pCi/g	JP BREWSTER	25-SEP-1996
TSD553-710	% U-235	ND		%	RJ TIPTON	19-SEP-1996
	Uranium	0.009	0.006	ug/g	RJ TIPTON	19-SEP-1996

Spike Recovery Data

Analyte	Amount Spiked	Amount Recovered	Percent Recovered
Amy	17.24	15.6	90.49

Arsenic	17.24	-25.76	-149.42
Barium	17.24	12.55	72.80
Beryllium	17.24	15.2	88.17
Ca ²	17.24	0.4	2.32
Col	17.24	3.5	20.30
Molybdenum	17.24	-32.8	-190.26
Selenium	17.24	12.7	73.67
Silver	17.24	-0.1	-0.58
Vanadium	17.24	1.7	9.86

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)

Date Approved: 2-OCT-1996

Definition Page for Qualifiers/Flags

960906-011

Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

Waste Stream Number: 342-2 & 342-3

Waste Stream Title: Generator Solutions and Sludge

1-15. 342-3

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

ANALIS ID: 960207-125 Project: ER 9567C Requisition Number: 20212
 Customer Sample ID: VER32106002 Customer: ENV RESTORATION
 Date Sampled: 6-FEB-1996 10:10 Date Sample Received: 7-FEB-1996
 Sampled By: MB HAMEL Date Sample Completed: 22-MAR-1996
 Material Description: waste verification

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ACD-5101	Density	1.13		g/mL	ML STEWART	8-FEB-1996	96110012
SW846-1010	Flash Point	>80		oC	ML STEWART	15-MAR-1996	96110020
SW846-3015	Sample Prep Metals	COMPLETE			ML STEWART	8-FEB-1996	96080179
SW846-3510	Sample Prep PCB	COMPLETE			SL EWING	8-FEB-1996	96160043
SW846-3520	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	12-FEB-1996	96160051
SW846-6010A	Arsenic	1080000		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Barium	9.0U		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Cadmium	17400		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Chromium	762		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Lead	223UN		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Selenium	755U		UG/L	EL SIMPSON	8-FEB-1996	96080179
	Silver	19.0UJN		UG/L	EL SIMPSON	8-FEB-1996	96080179
SW846-7470	Mercury	10U		ug/L	RL POLK	21-FEB-1996	96080185
SW846-8080	PCB-1232	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1242	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1248	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1254	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1260	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	PCB-1268	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
	Total PCB	5U		ug/L	DH BLUE	17-FEB-1996	96160216M5
SW846-9010A	Total Cyanide	0.02UJ		mg/L	SL LEMASTER	9-FEB-1996	96100213
SW846-9020A	TOX	< 40		ug/L	DE COLLINS	4-MAR-1996	96160304T2
SW846-9030A	Sulfide	50U		mg/L	SL LEMASTER	8-FEB-1996	96100205
SW846-9040B	pH	8.62		pH units	SL LEMASTER	9-FEB-1996	96100214
TSD553-230	Gross Alpha	UJ<4.5		pCi/mL	JP BREWSTER	15-MAR-1996	96070365
	Gross Beta	105		pCi/mL	JP BREWSTER	15-MAR-1996	96070365
T... -380	Technetium	<0.9		pCi/mL	JP BREWSTER	15-MAR-1996	96070363

TSD553-440	Cesium-134	<0.2J		pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Cesium-137	<0.2J		pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Cobalt-60	<0.3J		pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
	Gross Gamma	93.8J		pCi/ml	WC ZUEFLE	17-FEB-1996	96070226
TSD553-700	% U-235	ND	ND	%	CD GOOD	12-FEB-1996	96070187
	Alpha Activity	<1		pCi/mL	BW SHORT	12-FEB-1996	96070188
	Americium-241	<0.017	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Neptunium-237	<0.024	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Plutonium-238	<0.006	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Plutonium-239/240	<0.006	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Protactinium-234	<0.01	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070187
	Thorium-228	<0.035	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-230	<0.035	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-232	<0.024	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070188
	Thorium-234	<0.012	N/A	pCi/mL	CD GOOD	12-FEB-1996	96070187
	Uranium	<0.050	NA	ug/mL	CD GOOD	12-FEB-1996	96070187

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Mercury	40.0	44.8	112.00

Lab Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 C. J. Van Meter (Organic Analytical Services)

Date Approved: 22-MAR-1996

***** COMMENT PAGE *****
***** 960207-125 *****

** Comments from the Environmental and Industrial Hygiene Laboratory *****

SW846-9040B pH run in replicate. Replicate pH=8.61.

SW846-9010A cyanide reported as an estimate due to blank spike recovery outside acceptable QC limits (56% recovery).

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Ag qualified as estimate due to interference check not meeting O.C. limits.

ACD-5101 Density duplicate result is 1.11 g/mL.

***** Comments from the Radiochemistry Laboratory *****

GAMMA ACTIVITY RESULTS FOR 960207-125 ARE:

Analyte	Result(pCi/ml)	+/-
K-40	93.8J	10.5J

***** Comments from the Organic Analytical Services *****

SW846-3520:SV Extraction

A light green precipitate was observed during basic extraction. More than 25 ml H₂SO₄ was required to complete acid extraction and foaming occurred during this process. A white insoluble precipitate remained after acidic extraction.

--Method SW846-8270A

Recoveries for hexachloroethane, nitrobenzene, and 2,4-Dinitrotoluene were below method acceptance criteria in the matrix spike of this sample. For this reason these compounds were reported as estimated sample quantitation limits.

SW846-9020A

Sample was diluted due to instrument malfunctions which caused a shortage of sample.

Ino. Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.
- Entering "S", "W", OR "*" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960207-125
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: C. J. Van Meter

Customer Sample ID: VER32106002
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 20212
Date Sample Received: 7-FEB-1996
Date Sampled: 6-FEB-1996

RCRA_SEMIVOLATILES

Date Extracted/Prepared: 12-FEB-1996
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 16-FEB-1996
QA File Number: 96160216B01
Dilution Factor: 1.0
Analyst: BD FUHR

CAS	ug/L	CAS	ug/L
95-48-7	2-Methylphenol	11U	
108-39-4	m-Cresol	11U	
106-44-5	4-Methylphenol	11U	
87-86-5	Pentachlorophenol	22U	
95-95-4	2,4,5-Trichlorophenol	11U	
88-06-2	2,4,6-Trichlorophenol	11U	
	Total Cresol	NA	
106-46-7	1,4-Dichlorobenzene	11U	
121-14-2	2,4-Dinitrotoluene	22UJ	
118-74-1	Hexachlorobenzene	11U	
	Hexachloro-1,3-butadiene	11U	
67-72-1	Hexachloroethane	11UJ	
98-95-3	Nitrobenzene	11UJ	
110-86-1	Pyridine	11U	

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

RCRA SEMIVOLATILES ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 960207-125
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: VER32106002
Customer: ENV RESTORATION
File ID: _____
Date Received: 7-FEB-1996
Date Analyzed: 16-FEB-1996
Concentration Units: ug/L

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	2-Butoxy-Ethanol	7.62	300	J
2. 65-85-0	Benzoic acid	12.92	30	J
3.	Caprolactam	14.28	20	J
4. 112-05-0	Nonanoic Acid	14.42	20	J
5.	unknown	25.88	20	J
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
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24.				
25.				
26.				
27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 960207-125
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: C. J. Van Meter

Customer Sample ID: VER32106002
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 20212
Date Sample Received: 7-FEB-1996
Date Sampled: 6-FEB-1996

RCRA_VOLATILES

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 9-FEB-1996
QA File Number: 96160209A3
Dilution Factor: 1.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
71-43-2	Benzene	2U			
56-23-5	Carbon Tetrachloride	2U			
108-90-7	Chlorobenzene	2U			
67-66-3	Chloroform	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	2U			
78-93-3	2-Butanone	280			
127-18-4	Tetrachloroethene	2U			
79-01-6	Trichloroethene	2U			
75-01-4	Vinyl Chloride	1U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

RCRA VOLATILES ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 960207-125

Laboratory: Organic Analytical Services

Sample Matrix: LIQUID WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

Customer Sample ID: VER32106002

Customer: ENV RESTORATION

File ID: _____

Date Received: 7-FEB-1996

Date Analyzed: 9-FEB-1996

Concentration Units: ug/L

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 67-64-1	Acetone	9.95	550	
2. 108-88-3	Toluene	17.9	5	
3. 75-07-0	Acetaldehyde	7.65	20	J
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
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19.				
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21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: U343-2

Waste Stream Title: Parts Cleaning Solution



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

1014889

ACTREL 4493L CLEANER

PAGE: 1
DATE PREPARED: MAY 8, 1992
MSDS NO.: 92864493

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: ACTREL 4493L CLEANER

CHEMICAL NAME:
Petroleum Hydrocarbon

CAS 64771-72-8

CHEMICAL FAMILY:
Aliphatic Hydrocarbon

PRODUCT DESCRIPTION:
Clear colorless liquid; mild hydrocarbon odor.

EMERGENCY TELEPHONE NUMBERS: EXXON CHEMICAL AMERICAS 713-870-6000
CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT INFORMATION

This product is not hazardous as defined in 29 CFR 1910.1200

SECTION 3 HEALTH INFORMATION & PROTECTION

NATURE OF HAZARD

EYE CONTACT:

Slightly irritating but does not injure eye tissue.

SKIN CONTACT:

Occasional brief contact with the liquid will not result in significant irritation unless evaporation is impeded.

Frequent or prolonged contact may irritate and cause dermatitis.

Low order of toxicity.

Skin contact may aggravate an existing dermatitis condition.

INHALATION:

High vapor/aerosol concentrations (greater than approximately 700 ppm, attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death.

Negligible hazard at ambient temperature (-18 to 38 Deg C; 0 to 100 Deg F)

INGESTION:

Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury, possibly progressing to death.

Low order of toxicity.

FIRST AID

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.



MATERIAL SAFETY DATA SHEET

SKIN CONTACT:

Flush with large amounts of water; use soap if available.

Remove grossly contaminated clothing, including shoes, and launder before reuse.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

WORKPLACE EXPOSURE LIMITS**EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:**

300 ppm total hydrocarbon based on composition.

PRECAUTIONS**SPECIAL PRECAUTIONS:**

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

PERSONAL PROTECTION:

For open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.

Where contact may occur, wear safety glasses with side shields.

Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION:

The use of mechanical dilution ventilation is recommended whenever this product is used in a confined space, is heated above ambient temperatures, or is agitated.

SECTION 4 FIRE & EXPLOSION HAZARD

FLASHPOINT: 203 Deg F. **METHOD:** PMCC D-93 **NOTE:** Typical

FLAMMABLE LIMITS: LEL: 1.4 UEL: 8.9

AUTOIGNITION TEMPERATURE: 410 Deg F. **NOTE:** Approximately

GENERAL HAZARD:

Low Hazard, liquid can burn upon heating to temperatures at or above the flashpoint.

"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

ACTREL 4493L CLEANER

PAGE: 3
DATE PREPARED: MAY 8, 1992
MSDS NO.: 92864493

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use foam, dry chemical, or water spray to extinguish fire.
Avoid spraying water directly into storage containers due to danger of boilover.
This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.

HAZARDOUS COMBUSTION PRODUCTS:

No unusual

SECTION 5 SPILL CONTROL PROCEDURE

LAND SPILL:

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or with a suitable absorbent.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL:

Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 6 NOTES

HAZARD RATING SYSTEMS:

This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704	KEY
HEALTH	1	1	4 = Severe
FLAMMABILITY	1	1	3 = Serious
REACTIVITY	0	0	2 = Moderate
			1 = Slight
			0 = Minimal



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

ACTREL 4493L CLEANER

PAGE: 4
DATE PREPARED: MAY 8, 1992
MSDS NO.: 92864493

SECTION 7 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):

DOT HAZARD CLASS: Not regulated
DOT IDENTIFICATION NUMBER: Not Available

FLASHPOINT: 203 Deg F. METHOD: PMCC D-93 NOTES: Typical

TSCA:

This product is listed on the TSCA Inventory at CAS Registry Number 64771-72-8

CERCLA:

If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III:

Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:

Not Hazardous.

This product does not contain Section 313 Reportable Ingredients.

SECTION 8 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

SPECIFIC GRAVITY:

0.76 at 60

SOLUBILITY IN WATER, WT. % AT °F:

Insoluble

SP. GRAV. OF VAPOR, at 1 atm (Air=1):

Greater than 1.00

EVAPORATION RATE, n-Bu Acetate=1:

Negligible

VAPOR PRESSURE, mmHg at °F:

Less Than 1 at 100

VISCOSITY OF LIQUID, CST AT °F:

2 at 77

FREEZING/MELTING POINT, °F:

25 Pour Point ASTM D97

BOILING POINT, °F:

430 to 480 Approximately

SECTION 9 REACTIVITY DATA

STABILITY:

Stable

CONDITIONS TO AVOID INSTABILITY:

Not Applicable

HAZARDOUS POLYMERIZATION:

Will not occur

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS:

None

SECTION 10 STORAGE AND HANDLING



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

ACTREL 4493L CLEANER

PAGE: 5
DATE PREPARED: MAY 8, 1992
MSDS NO.: 92864493

STORAGE TEMPERATURE, °F:

Ambient

STORAGE/TRANSPORT PRESSURE, mmHg:

Atmospheric

LOADING/UNLOADING TEMPERATURE, °F:

Ambient

VISC. AT LOADING/UNLOADING TEMP., cSt:

2

REVISION SUMMARY:

Since APRIL 12, 1992 this MSDS has been revised in Section(s):

4, 5, 6

REFERENCE NUMBER:

HDHA-C-25082

DATE PREPARED:

May 8, 1992

SUPERSEDES ISSUE DATE:

Apr 11 12, 1992

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 713-870-6884

THIS INFORMATION RELATES TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, LIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OWN PARTICULAR USE. WE DO NOT ACCEPT LIABILITY FOR ANY LOSS OR DAMAGE THAT MAY OCCUR FROM THE USE OF THIS INFORMATION NOR DO WE OFFER WARRANTY AGAINST PATENT INFRINGEMENT.

Waste Stream Number: 344-1A and 1B

Waste Stream Title: Oil/Filters and Oil Debris

Internal Correspondence

MARTIN MARIETTA ENERGY SYSTEMS, INC.

July 11, 1991
POEF-554-91-324

W. A. Kelley, MS-7550

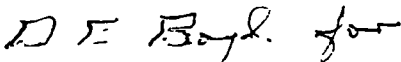
Toxicity Characteristic Leaching Procedure [TCLP] - X-344 Roof

Representative samples taken from the X-344 roof to determine the disposition of refuse created during roof repair were submitted by Waste Management for TCLP tests. Samples WMS-631, WMS-632, WMS-633, WMS-634 (all 5-6-91) were tested using Method 1311, as published in the Federal Register and revised on June 29, 1990. Analyses showed no TC characteristics greater than limits stated in Table 1 of 40 CFR Part 261.24. Volatile organic constituents were tested using Zero Headspace Extractors [ZHE] to verify values. Matrix interferences were checked in extracts for each parameter and appropriate corrections made. Data from analyses are shown in Tables 1 and 2.

Additional tentatively identified compounds were also reported. These compounds were identified using computer-based probability matching of sample spectra to a reference library database. Data given in Table 3 are estimations based on comparison to internal standards.



L. E. Deacon, X-710, MS-2215, (5774)



M. R. Kelley, X-710, MS-2215, (5774)

LED:MRK:msc

cys: T. A. Acox	MS-7550
C. P. Moore	MS-7550
N. J. Smith	MS-2232
D/554 File - RC	

TABLE 1. ORGANIC ANALYSES OF TCLP EXTRACTS

All values of samples WMS-631, WMS-632, WMS-633, and WMS-634 are as shown for each compound. Values are given in mg/L.

	<u>Concentration</u>	<u>Regulatory Limit</u>
Volatiles		
Benzene	<0.005	0.5
Carbon tetrachloride	<0.005	0.5
Chlorobenzene	<0.005	100.0
Chloroform	<0.005	6.0
1,4-Dichlorobenzene	<0.005	7.5
1,2-Dichloroethane	<0.005	0.5
1,1-Dichloroethylene	<0.005	0.7
Methyl ethyl ketone	<0.100	200.0
Tetrachloroethylene	<0.005	0.7
Trichloroethylene	<0.005	0.5
Vinyl chloride	<0.010	0.2
Semivolatiles [acids]		
o-Cresol	<0.010	200.0*
m-Cresol	<0.010	200.0*
p-Cresol	<0.010	200.0*
Pentachlorophenol	<0.100	100.0
2,4,5-Trichlorophenol	<0.010	400.0
2,4,6-Trichlorophenol	<0.010	2.0
Semivolatiles [base-neutral]		
2,4-Dinitrotoluene	<0.01	0.13
Hexachlorobenzene	<0.01	0.13
Hexachlorobutadiene	<0.01	0.5
Hexachloroethane	<0.01	3.0
Nitrobenzene	<0.01	2.0
Pyridine	<0.01	5.0

* - Regulatory limit for total cresol is 200.0 mg/L.

TABLE 2. METALS ANALYSES OF TCLP EXTRACTS
(Values are mg/L)

<u>Sample</u>	<u>Arsenic</u>	<u>Barium</u>	<u>Cadmium</u>	<u>Chromium</u>	<u>Lead</u>	<u>Mercury</u>	<u>Selenium</u>	<u>Silver</u>
LIMIT	5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0
WMS-631	<0.50	0.352	<0.015	<0.018	0.052	<0.01	0.21	<0.10
WMS-632	<0.50	0.364	<0.015	<0.018	0.073	<0.01	0.21	<0.10
WMS-633	<0.50	0.355	<0.015	0.027	0.109	<0.01	0.10	<0.10
WMS-634	<0.50	0.313	0.032	0.042	0.429	<0.01	0.15	<0.10

TABLE 3. ORGANIC TENTATIVELY IDENTIFIED COMPOUNDS
(Values are mg/L)

	<u>WMS-631</u>	<u>WMS-632</u>	<u>WMS-633</u>	<u>WMS-634</u>	<u>Detection Limit</u>
Methoxyhydroxy benzaldehyde	0.04	0.30	1.5	0.03	0.02
Naphthalene	0.08	0.20	1.5	0.03	0.02
Furfural	--	--	0.10	--	0.02
Benzaldehyde	--	--	0.02	--	0.02
Isoquinoline	--	--	0.03	--	0.02

Waste Stream Number: 344-2

Waste Stream Title: Solvent

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

344-2
USEC

AnalIS ID: 960909-085 Project: ER 9567UC Requisition Number: 22853
Customer Sample ID: VER38095001 Customer: ENV RESTORATION
Date Sampled: 9-SEP-1996 09:40 Date Sample Received: 9-SEP-1996
Sampled By: B PYLES Date Sample Completed: 10-OCT-1996
Material Description: oil liquid

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed
SW846-3580A	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	23-SEP-1996
TSD553-230	Gross Alpha	J 0.4		pCi/mL	JP BREWSTER	23-SEP-1996
	Gross Beta	<0.3		pCi/mL	JP BREWSTER	23-SEP-1996
TSD553-380	Technetium	<0.8		pCi/mL	JP BREWSTER	23-SEP-1996
TSD553-700	% U-235	ND		pCi/L	RJ TIPTON	1-OCT-1996
	Uranium	148	80	ug/L	RJ TIPTON	1-OCT-1996

L ty Manager: B. W. Short (Radiochemistry Laboratory)
 C. J. Van Meter (Organic Analytical Services)
Date Approved: 15-OCT-1996

***** COMMENT PAGE *****
***** 960909-085 *****

**** Comments from the Organic Analytical Services ****

SW846-8260A

Due to solvent content in sample, analysis was performed by the high level method which involves a methanolic extraction and results in higher detection limits.

--Method SW846-8270A

Due to this sample matrix (oil) being soluble in the extraction solvent (methylene chloride), this sample was prepared by the waste dilution method. This resulted in the higher sample quantitation limits reported.

The first sample, other than blanks and laboratory control samples injected in the analytical batch QA #96160924B02, apparently reacted in the injection port liner of the GC resulting in poor response for the last two internal standards in all subsequent injections for this batch. These samples were VER38095-001, VER39161-001, and VER37026-001 with all their associated MS & MSD preparations. The effects of this low internal standard area were limited to high recovery of the last B/N surrogate (Terphenyl-d14) and high recovery of the matrix spike compound Pyrene. Contact was made with the customer for the verification project (Jeff Deemie) through the project manager (John Taphorn). Problems discussed included the usefulness of information obtainable by the re-injection of these samples as required by the method, as well as reporting requirements for compounds that exceeded the initial calibration range and compounds not present in the initial calibration. The response received was to not devote more resources to re-injecting these samples and to report compounds that exceed the initial calibration or are not present in the initial calibration as estimated values.

Five compounds were reported as ND (not detected), these are compounds that are not in calibration standards prepared for this run. However, these compounds have been extensively tested in the lab for GC/MS information. Had these compounds been detected, the sample would have been reinjected against a valid calibration curve for these compounds or reported as estimates.

The GC chromatogram contained 6 separate bands of peaks that were about 1 to 1.5 minutes wide occurring between 18 and 32 minutes. These 6 bands were fairly intense and masked/interfered with some of the target compounds that happened to co-elute with them.

There were more than fifty non-target compounds with area abundances approximately equal to or greater than 10% of the internal standards. The mass spectra of these compounds were compared by computer to a reference mass spectral database library containing ~75,000 spectra. The identification matches were then reviewed and either accepted and reported or rejected and reported as unknowns. The large portion of these TICs were left as unknowns since no reliable match could be obtained. However, many of these TICs were due to the 6 broad peaks mentioned above. They all had similar mass spectra data including masses of 85, 101, 135, and 151, which agreed well with the mass spectra from an MFL oil standard. Although the retention times for this sample and the MFL oil standard did not agree well, these TICs very likely are comprised of similar molecular fragments containing multi-fluorinated and chlorinated molecules. Due to the capability of the ANALIS system for reporting TIC's

in an appropriate format, they are not included in this report. A detailed listing of these TICs in standard laboratory format is included in the data package for this sample, and can be made available upon request.

Inc - Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace analysis is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 960909-085
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: C. J. Van Meter

Customer Sample ID: VER38095001
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 22853
Date Sample Received: 9-SEP-1996
Date Sampled: 9-SEP-1996

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 17-SEP-1996
QA File Number: 96160917A3
Dilution Factor: 1000
Analyst: MA NOVOTNY

CAS		ug/kg	CAS	
67-64-1	Acetone	860000	100-41-4	Ethyl benzene
71-43-2	Benzene	2000U	76-13-1	Freon 113
75-27-4	Bromodichloromethane	2000U	76-14-2	Freon 114
75-25-2	Bromoform	2000U	108-10-1	4-Methyl-2-pentanone
74-83-9	Bromomethane	12000	75-09-2	Methylene Chloride
78-93-3	2-Butanone	100000U	79-34-5	1,1,2,2-Tetrachloroethane
75-15-0	Carbon Disulfide	2000U	127-18-4	Tetrachloroethene
56-23-5	Carbon Tetrachloride	2000U	108-88-3	Toluene
108-90-7	Chlorobenzene	2000U	71-55-6	1,1,1-Trichloroethane
75-00-3	Chloroethane	4000U	79-00-5	1,1,2-Trichloroethane
67-66-3	Chloroform	2000U	79-01-6	Trichloroethene
74-87-3	Chloromethane	9400	75-69-4	Trichlorofluoromethane
124-48-1	Dibromochloromethane	2000U	75-01-4	Vinyl Chloride
106-46-7	1,4-Dichlorobenzene	2000U	1330-20-7	m,p-Xylene
95-50-1	1,2-Dichlorobenzene	2000U	95-47-6	o-Xylene
541-73-1	1,3-Dichlorobenzene	2000U		
75-34-3	1,1-Dichloroethane	14000		
107-06-2	1,2-Dichloroethane	2000U		
75-35-4	1,1-Dichloroethene	89000		
156-59-2	cis-1,2-Dichloroethene	2000U		
156-60-5	trans-1,2-Dichloroethene	2000U		

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 960909-085
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 1000

Customer Sample ID: VER38095001
Customer: ENV RESTORATION
File ID: _____
Date Received: 9-SEP-1996
Date Analyzed: 17-SEP-1996
Concentration Units: ug/kg

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
=====	=====	=====	=====	=====
1. 95-63-6	1,2,4-Trimethylbenzene	23.6	6600	
2.	3,3'-thiobis[2-methyl-1propene	23.9	70000	J
3.				
4.				
5.				
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30.				

ANALYSIS DATA REPORT

AnalIS ID: 960909-085
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV2
Authorized By: C. J. Van Meter

Customer Sample ID: VER38095001
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 22853
Date Sample Received: 9-SEP-1996
Date Sampled: 9-SEP-1996

Semi-Volatiles

Date Extracted/Prepared: 23-SEP-1996
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 24-SEP-1996
QA File Number: 96160924B02
Dilution Factor: 1.0
Analyst: BD FUHR

CAS		ug/kg	CAS	
59-50-7	4-Chloro-3-methylphenol	87800U	606-20-2	2,6-Dinitrotoluene
95-57-8	2-Chlorophenol	43900U	78-59-1	Isophorone
120-83-2	2,4-Dichlorophenol	43900U	98-95-3	Nitrobenzene
105-67-9	2,4-Dimethylphenol	43900U	83-32-9	Acenaphthene
51-28-5	2,4-Dinitrophenol	220000U	208-96-8	Acenaphthylene
534-52-1	4,6-Dinitro-2-methylphenol	220000U	120-12-7	Anthracene
88-75-5	2-Nitrophenol	43900U	56-55-3	Benzo(a)anthracene
100-02-7	4-Nitrophenol	220000U	50-32-8	Benzo(a)pyrene
87-86-5	Pentachlorophenol	220000U	191-24-2	Benzo(g,h,i)perylene
108-95-2	Phenol	43900U	76-01-7	Benzo(k)fluoranthene
88-06-2	2,4,6-Trichlorophenol	43900U	218-01-9	Chrysene
117-81-7	bis(2-Ethylhexyl)phthalate	43900U	53-70-3	Dibenz(a,h)anthracene
85-68-7	Butylbenzylphthalate	43900U	206-44-0	Fluoranthene
84-74-2	Di-n-butylphthalate	43900U	86-73-7	Fluorene
84-66-2	Diethylphthalate	43900U	193-39-5	Indeno(1,2,3-cd)pyrene
131-11-3	Dimethylphthalate	43900U	91-20-3	Naphthalene
117-84-0	di-n-Octylphthalate	43900U	85-01-8	Phenanthrene
62-75-9	N-Nitrosodimethylamine	43900U	129-00-0	Pyrene
86-30-6	N-Nitrosodiphenylamine	43900U	111-44-4	bis(2-Chloroethyl)ether
621-64-7	N-Nitroso-di-n-propylamine	43900U	111-91-1	bis(2-Chloroethoxy)methane
121-14-2	2,4-Dinitrotoluene	43900U	39638-32-9	bis(2-Chloroisopropyl)ether

ANALYSIS DATA REPORT

AnalIS ID: 960909-085
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV2
Authorized By: C. J. Van Meter

Customer Sample ID: VER38095001
Customer: ENV RESTORATION
Sample Matrix: LIQUID W
Requisition Number: 22853
Date Sample Received: 9-SEP-1996
Date Sampled: 9-SEP-1996

Semi-Volatiles

Date Extracted/Prepared: 23-SEP-1996
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 24-SEP-1996
QA File Number: 96160924B02
Dilution Factor: 1.0
Analyst: BD FUHR

CAS		ug/kg	CAS
101-55-3	4-Bromophenyl-phenylether	43900U	
7005-72-3	4-Chlorophenyl-phenylether	43900U	
91-58-7	2-Chloronaphthalene	43900U	
95-50-1	1,2-Dichlorobenzene	43900U	
541-73-1	1,3-Dichlorobenzene	43900U	
106-46-7	1,4-Dichlorobenzene	43900U	
118-74-1	Hexachlorobenzene	43900U	
87-68-3	Hexachlorobutadiene	43900U	
77-47-4	Hexachlorocyclopentadiene	43900U	
67-72-1	Hexachloroethane	43900U	
120-82-1	1,2,4-Trichlorobenzene	43900U	
110-86-1	Pyridine	ND	
	2-Methylphenol (o-Cresol)	ND	
	3,4-Methylphenol (m,p-Cresol)	ND	
95-95-4	2,4,5-Trichlorophenol	ND	
	Azobenzene	43900U	
205-99-2	Benzo(b)fluoranthene	43900U	

Waste Stream Number: U344-5

Waste Stream Title: Decontamination Solutions

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 961123-008 Project: WMGT RFD Requisition Number: 24499
Customer Sample ID: RPD14495R Customer: ENV./WASTE MGT.
Date Sampled: 22-NOV-1996 14:00 Date Sample Received: 22-NOV-1996
Sampled By: M ALIFF Date Sample Completed: 13-DEC-1996
Material Description: decon soln

** No comments were made for this sample. **
** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD552-150	% U-235	2.4		% U-235	AL SHULTZ	11-DEC-1996	9607M246
	Uranium	7140		UG/L	AL SHULTZ	11-DEC-1996	9607M246

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
Date Approved: 16-DEC-1996

Definition Page for Qualifiers/Flags
961123-008

Organic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

J - Qualify data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

- Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an te.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

P - Probable Identification.

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 961123-009 Project: WMGT RPD Requisition Number: 24499
 Customer Sample ID: RFD14495RD Customer: ENV./WASTE MGT.
 Date Sampled: 22-NOV-1996 14:00 Date Sample Received: 22-NOV-1996
 Sampled By: M ALIFF Date Sample Completed: 13-DEC-1996
 Material Description: decon soln

** No comments were made for this sample. **
 ** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD552-150	‡ U-235	2.8		‡ U-235	AL SHULTZ	11-DEC-1996	9607M246
	Uranium	5830		UG/L	AL SHULTZ	11-DEC-1996	9607M246

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 Date Approved: 16-DEC-1996

Definition Page for Qualifiers/Flags

961123-009

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an e.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

344-5

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

AnalIS ID: 931124-131 Project: WMTG RFD Requisition Number: 006405
Customer Sample ID: RFD14495 Customer: ENV./WASTE MGT.
Date Sampled: 22-NOV-1993 13:30 Date Sample Received: 24-NOV-1993
Sampled By: BK KELLEY Date Sample Completed: 11-JAN-1994
Material Description: X344 MOP WATER

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-6010	Arsenic	3.2U		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Barium	0.43		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Cadmium	1.3		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Chromium	0.64		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Lead	1.6		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Selenium	4.5U		MG/KG	EL SIMPSON	1-DEC-1993	93080984
	Silver	0.24UN		MG/KG	EL SIMPSON	1-DEC-1993	93080984
SW846-7470	Mercury	.032		MG/KG	EK GILBERT	16-DEC-1993	93081071
TSD515-500	Uranium (Waste)	8.5		UG/G	SK BENNINGTON	14-DEC-1993	93101392
30	Gross Alpha Activity	15		pCi/mL	JJ SISLER	14-DEC-1993	93072040
	Gross Beta Activity	5		pCi/mL	JJ SISLER	14-DEC-1993	93072040
TSD553-380	Technetium	<0.9		pCi/mL	JJ SISLER	13-DEC-1993	93072025

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	37.74	33.0774	87.65
Barium	37.74	37.2615	98.73
Cadmium	37.74	36.4943	96.70
Chromium	37.74	38.2326	101.31
Lead	37.74	36.9849	98.00
Mercury	.147	0.116	78.91
Selenium	37.74	29.4755	78.10
Silver	37.74	8.4877	22.49
Uranium (Waste)	94.3	85.6	90.77

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial

dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

Qualify data for the sample as estimated.

- m - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
 - Aldol condensation product.
 - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
D. E. Boyd (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 13-JAN-1994

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 931124-131
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD14495
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 006405
Date Sample Received: 24-NOV-1993
Date Sampled: 22-NOV-1993

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 7-JAN-1994
QA File Number: 94160029
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/ml	CAS		ug/ml
71-43-2	Benzene	60U			
78-93-3	2-Butanone	60U			
56-23-5	Carbon Tetrachloride	.001U			
108-90-7	Chlorobenzene	60U			
67-66-3	Chloroform	NA			
106-46-7	1,4-Dichlorobenzene	.02U			
107-06-2	1,2-Dichloroethane	.01U			
75-35-4	1,1-Dichloroethene	.004U			
127-18-4	Tetrachloroethene	.001U			
79-01-6	Trichloroethene	.001U			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: Switch-1

Waste Stream Title: Lead Cable

PORTS MSDS #: 347

PRODUCT: STANDARD, LEAD 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Pb

KEYWORD: STANDARD

PORTS NUMBER: 00190041-100; 00190028-100; 00190041

PORTS MISC INFO:

LAB MSDS# 334

LAB MSDS# 347

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point.	~ 212 F	NOTE: ~100'C.
Melting Point.	~ 32 F	NOTE: ~0'C.
Freezing Point.	NG	
Pour Point.	NG	
Softening Point.	NG	
Specific Gravity.	~ 1	
Vapor Pressure.	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density.	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles.	~ 99	NOTE: @ 21'C.
Evaporation Rate.	NA	NOTE: NOT APPLI/NOT AVAIL.
pH.	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight.	EQ 207.20	NOTE: FORMULA WT.
Viscosity.	NG	
Solubility in Water. COMPLETE (100%).		
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD:		NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup.	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup.	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number.	NG
D.O.T. Hazard Class.	NG
Label.	NOT GIVEN
Proper Shipping Name.	CHEMICALS, N.O.S. (NON-REGULATED)

=====

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

==== Component Information =====

LEAD

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.15
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 1.0
C.A.S. No.: 7439921

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product %: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

==== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Lead Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Pb

FORMULA WT.: 207.20

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.

CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: This product contains a chemical known to the State of California to cause birth defects and other reproductive harm.

EFFECTS OF OVEREXPOSURE:

INHALATION: Severe irritation or burns of respiratory system, headache, nausea, vomiting, dizziness, pulmonary edema, lung inflammation, may be fatal

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, nausea, vomiting, kidney dysfunction

CHRONIC EFFECTS: Damage to lungs, teeth, anemia, kidney damage, blurred vision, lead build-up in the central nervous system

TARGET ORGANS: Eyes, skin, mucous membranes, GI tract, central nervous system, gingival tissue, respiratory system, lungs, kidneys, blood, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease, lung disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If conscious, give water, milk or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Lead (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Lead and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURES: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: Switch-2

Waste Stream Title: Oil

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920624-001 Project: WMGT RFD Customer Sample ID: RFD-8534
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 23-JUN-1992 Date Sample Received: 23-JUN-1992
Sampled By: B KELLEY Date Sample Completed: 18-DEC-1992
Material Description: WASTE OIL & SOLVENT

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ASTMD3828	Flash Point (Setaflash)	86		Deg. F	DK SCAGGS	23-JUL-1992	X
EC-013	Mercury	NA		ug/L	TE SHOOK	22-SEP-1992	NA
SW846-3051	Arsenic	3.8*		mg/kg	AL SHULTZ	18-NOV-1992	92080457
	Selenium	0.69		mg/kg	AL SHULTZ	18-NOV-1992	92080457
	Silver	15.5*		mg/kg	AL SHULTZ	18-NOV-1992	92080457
TSD515-500	Uranium (Waste)	<1.0		ug/g	DK PEREZ	7-JUL-1992	92101072
TSD552-103	Barium	.02		mg/kg	EK GILBERT	7-JUL-1992	92080284
	Cadmium	.03 U*		mg/kg	EK GILBERT	7-JUL-1992	92080284
	Chromium	.06		mg/kg	EK GILBERT	7-JUL-1992	92080284
	Lead	.29 *		mg/kg	EK GILBERT	7-JUL-1992	92080284
TSD553-440	Assay (% U-235, Waste)	NA			JD LITTERAL	3-AUG-1992	92070696

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
BARIUM	9.99	11.03	110.41
CADMIUM	9.99	10.14	101.50
CHROMIUM	9.99	7.78	77.88
LEAD	9.99	9.39	93.99
URANIUM (WASTE)	40	38.7	96.75

***** Comments from the Spectrochemistry/ICP Laboratory *****

Sample beyond holding time for mercury.

***** Comments from the Organic Analytical Services *****

There was a matrix interference with 1,2-dichloroethane and chloroform.

Analytical Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP series dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

J - Qualify data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

- Indicates an estimated value.

- Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
O. A. Vita (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)
D. E. Boyd (Organic Analytical Services)
John E. Hobensack (Oil & Coal Analysis Laboratory)

Date Approved: 20-DEC-1992

AnaLIS ID: 920624-001
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-8534
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 23-JUN-1992
Date Sampled: 23-JUN-1992

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-JUL-1992
QA File Number: 92160161
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	320			
	2-Butanone (MEK)	1400			
56-23-5	Carbon Tetrachloride	0.4U			
108-90-7	Chlorobenzene	0.8U			
67-66-3	Chloroform	NA			
	p-Dichlorobenzene	.4U			
107-06-2	1,2-Dichloroethane	NA			
75-35-4	1,1-Dichloroethene	0.4U			
127-18-4	Tetrachloroethene	0.4U			
79-01-6	Trichloroethene	0.4U			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

WSID-SWITCH-2

ANALIS ID: 920309-039	Project: WMT RFD	Customer Sample ID: RFD-8617
Customer: WASTE MANAGEMENT		Requisition Number:
Date Sampled: 6-MAR-1992		Date Sample Received: 6-MAR-1992
Sampled By: B. KELLEY		Date Sample Completed: 23-OCT-1992
Material Description: SWITCHYARD OIL		

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
EC-006	Arsenic	NA		mg/L	EL SIMPSON		
EC-013	Mercury	<.02 N		mg/kg	SJ SCHOETTLE	11-MAR-1992	9208A073
EC-015	Selenium	NA		mg/L	EL SIMPSON		
EC-040	Barium	NA		mg/L	AL SHULTZ		
	Cadmium	NA		mg/L	AL SHULTZ		
	Chromium	NA		mg/L	AL SHULTZ		
	Lead	NA		mg/L	AL SHULTZ		
S' 10	Silver	<1.0 N		mg/kg	TE SHOOK	21-AUG-1992	92080304
SW846-8080	PCB (TOTAL)	7.4		ug/g	JN STRICKLAND	13-MAR-1992	92160055
TSD515-500	Uranium (Waste)	2.0		ug/g	CJ HOLBROOK	13-MAR-1992	92100416
TSD553-370	Technetium (Waste)	11.7		pCi/mL	JJ SISLER	17-MAR-1992	92070185
TSD553-440	Assay (% U-235, Waste)	NA		% U-235	JD LITTERAL	29-SEP-1992	92070975

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
MERCURY	.200	0.140	70.00
SILVER	1000	343.	34.30
URANIUM (WASTE)	40	36.6	91.50

***** Comments from the Infrared and Chromatographic Services Laboratory *****

	Percent Sample (Vol./Vol.)	Total PCB, ppm
Organic Layer	17	7.4 (ug/g)
Aqueous Layer	83	<0.3 (ug/ml)

Organic Layer (Spike, 8.96 ppm PCB-1260)	14.8 ug/g (83% Recovery)
Aqueous Layer (Spike, 2.2 ppm PCB-1260)	2.2 ug/ml (100% recovery)

ata Reporting Qualifiers and Flags:

ration Qualifiers:

- The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.
The value is between the LC and the LLD.
Flag "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
D. E. Boyd (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 23-OCT-1992

Waste Stream Number: Switch-3

Waste Stream Title: Switches

PORTS MSDS #: 347

PRODUCT: STANDARD, LEAD 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Pb

KEYWORD: STANDARD

PORTS NUMBER: 00190041-100; 00190028-100; 00190041

PORTS MISC INFO:

LAB MSDS# 334

LAB MSDS# 347

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . ~ 212 F

NOTE: ~100'C.

Melting Point. . . . ~ 32 F

NOTE: ~0'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . . NG

Specific Gravity . . ~ 1

Vapor Pressure . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Vapor Density. . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Percent Volatiles. . ~ 99

NOTE: @ 21'C.

Evaporation Rate . . NA

NOTE: NOT APPLI/NOT AVAIL.

pH NA

NOTE: NOT APPLI/NOT AVAIL.

Molecular Weight . . EQ 207.20

NOTE: FORMULA WT.

Viscosity. NG

Solubility in Water. COMPLETE (100%).

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLI/NOT AVAIL.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

NOTE: NOT APPLI/NOT AVAIL.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Upper (UEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

=====

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

==== Component Information =====

LEAD

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.15
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.0
C.A.S. No.: 7439921

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

==== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Lead Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Pb

FORMULA WT.: 207.20

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.

CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: This product contains a chemical known to the State of California to cause birth defects and other reproductive harm.

EFFECTS OF OVEREXPOSURE:

INHALATION: Severe irritation or burns of respiratory system, headache, nausea, vomiting, dizziness, pulmonary edema, lung inflammation, may be fatal

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, nausea, vomiting, kidney dysfunction

CHRONIC EFFECTS: Damage to lungs, teeth, anemia, kidney damage, blurred vision, lead build-up in the central nervous system

TARGET ORGANS: Eyes, skin, mucous membranes, GI tract, central nervous system, gingival tissue, respiratory system, lungs, kidneys, blood, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease, lung disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting if conscious, give water, milk or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Lead (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Lead and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

==== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

==== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURES: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

==== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

==== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

==== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

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Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: 600-1

Waste Stream Title: Solvent

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

AnalIS ID: 940901-160 Project: WMGT RFD Requisition Number: 011114
Customer Sample ID: RFD24249 Customer: ENV./WASTE MGT.
Date Sampled: 1-SEP-1994 11:00 Date Sample Received: 1-SEP-1994
Sampled By: R CAUDILL Date Sample Completed: 23-NOV-1994
Material Description: X333 DEGREASER *at DAP*

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ASTMD3828	Flash Point (Setaflash)	> 212		Deg. F	LE WILLIAMS	8-SEP-1994	X
SW846-6010	Arsenic	4.1U		mg/kg	TE SHOOK	16-SEP-1994	94081086
	Barium	2.6		mg/kg	TE SHOOK	16-SEP-1994	94081086
	Cadmium	0.67		mg/kg	TE SHOOK	16-SEP-1994	94081086
	Chromium	1.6		mg/kg	TE SHOOK	16-SEP-1994	94081086
	Lead	3.6		mg/kg	TE SHOOK	16-SEP-1994	94081086
	Silver	0.19		mg/kg	TE SHOOK	16-SEP-1994	94081086
SW846-7470	Mercury	.025UN		mg/kg	KA DAYS	12-SEP-1994	94081113
SW846-7740	Selenium	1.0U		mg/kg	EL SIMPSON	8-SEP-1994	94081086
DO	PCB (TOTAL)	7.5		ug/g	DL HUSTED	13-SEP-1994	94160913M1
TSD515-500	Uranium	<1.2		ug/g	TE BARNETT	12-SEP-1994	94101191
TSD553-380	Technetium	<0.9		pCi/mL	BW SHORT	15-OCT-1994	94071827
TSD553-440	% U-235	NA		% U-235	BW SHORT	14-SEP-1994	NA

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	38.46	38.94	101.25
Barium	38.46	41.16	107.02
Cadmium	38.46	40.05	104.13
Chromium	38.46	40.59	105.54
Lead	38.46	41.09	106.84
Mercury	.150	0.105	70.00
Selenium	400	405.9	101.47
Silver	38.46	38.78	100.83

***** Comments from the Radiochemistry Laboratory *****

1 low for assay determination by gamma. B. W. Short

***** Comments from the Organic Analytical Services *****

Method SW846-8080:

Sample	Percent Sample (Vol./Vol.)	Total PCB, ppm
RFD 24...		
Organic layer	13	7.5 ug/g
Aqueous layer	87	<0.3 ug/ml

Sample	Amount PCB-1260 Spiked	Amount PCB-1260 Recovered	Percent Recovered
Organic layer - spike	4.83 ug/g	11.9 ug/g	91
Replicate spike	4.83 ug/g	11.1 ug/g	75
Aqueous layer - spike	2.50 ug/ml	1.9 ug/ml	76
Replicate spike	2.50 ug/ml	2.0 ug/ml	80

Procedure #TSD554-019 (SOLVENT ANALYSIS)

Aqueous layer

F001 and F002 compounds are all <0.02ug/mL

F003 and F005 compounds are all <100ug/mL

(Extraction: acetone and ethyl ether = NA)

(Extraction: chlorobenzene = <0.10ug/mL)

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.

Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sam

concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

 e value is between the LC and the LLD.

Including "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)

D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)

R. E. Charles (Environmental and Industrial Hygiene Laboratory)

J. J. Williams (Organic Analytical Services)

John E. Hobensack (Oil & Coal Analysis Laboratory)

Date Approved: 23-NOV-1994

AnalIS ID: 940901-160
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD24249
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 011114
Date Sample Received: 1-SEP-1994
Date Sampled: 1-SEP-1994

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 10-NOV-1994
QA File Number: 9410112102
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	0.2U			
75-09-2	Methylene Chloride	0.2U			
127-18-4	Tetrachloroethene	0.2U			
71-55-6	1,1,1-Trichloroethane	0.2U			
79-01-6	Trichloroethene	0.2U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- Y - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

AnalIS ID: 940901-160
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD24249
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 011114
Date Sample Received: 1-SEP-1994
Date Sampled: 1-SEP-1994

Solvents_F002

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 10-NOV-1994
QA File Number: 9410112102
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
108-90-7	Chlorobenzene	1.0U			
	o-Dichlorobenzene	0.2U			
76-13-1	Freon 113	0.2U			
75-09-2	Methylene Chloride	0.2U			
127-18-4	Tetrachloroethene	0.2U			
71-55-6	1,1,1-Trichloroethane	0.2U			
79-00-5	1,1,2-Trichloroethane	0.2U			
79-01-6	Trichloroethene	0.2U			
75-69-4	Trichlorofluoromethane	0.2U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

AnaLIS ID: 940901-160
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD24249
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 011114
Date Sample Received: 1-SEP-1994
Date Sampled: 1-SEP-1994

Solvents_F003

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 10-NOV-1994
QA File Number: 9410112102
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
67-64-1	Acetone	NA			
71-36-3	N-Butyl Alcohol	200U			
108-94-1	Cyclohexanone	200U			
141-78-6	Ethyl Acetate	200U			
	Ethylbenzenes	200U			
60-29-7	Ethyl ether	NA			
67-56-1	Methanol	200U			
	4-Methyl-2-pentanone (MIBK)	200U			
	Xylenes	590			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

AnalIS ID: 940901-160
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD24249
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 011114
Date Sample Received: 1-SEP-1994
Date Sampled: 1-SEP-1994

Solvents_F005

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 10-NOV-1994
QA File Number: 9410112102
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	200U			
	i-Butanol	200U			
78-93-3	2-Butanone	200U			
75-15-0	Carbon Disulfide	NA			
	2-Ethoxy ethanol	200U			
79-46-9	2-Nitropropane	200U			
110-86-1	Pyridine	200U			
108-88-3	Toluene	200U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 600-2

Waste Stream Title: Oil

600-2

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 920102-011 Project: WNGT RFD Customer Sample ID: RFD-8129
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 31-DEC-1991 Date Sample Received: 31-DEC-1991
Sampled By: AR SELBEE Date Sample Completed: 30-DEC-1992
Material Description: WASTE OIL X770

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
EC-006	Arsenic	NA		mg/L	EL SIMPSON		
EC-013	Mercury	NA		mg/L	EL SIMPSON		
EC-015	Selenium	NA		mg/L	EL SIMPSON		
EC-016	Silver	NA		mg/L	EL SIMPSON		
EC-401	Barium	3.1 RN		mg/K	AL SHULTZ	8-JAN-1992	92080030
	Cadmium	0.61 N*R		mg/K	AL SHULTZ	8-JAN-1992	92080030
	Chromium	0.54 RN		mg/K	AL SHULTZ	8-JAN-1992	92080030
	Lead	1.8 RN		mg/K	AL SHULTZ	8-JAN-1992	92080030

***** Comments from the Spectrochemistry/ICP Laboratory *****

R - Results are unusable due to QC around the run.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
The reported value was obtained by the Method of Standard Additions (MSA).
Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.
e value is between the LC and the LLD.
- c) g "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: O. A. Vita (Spectrochemistry/ICP Laboratory)
D. E. Boyd (Organic Analytical Services)

Date Approved: 31-DEC-1992

ANALYSIS DATA REPORT

Page 1 of 1

ANALIS ID: 920102-011
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-8129
Customer: WASTE MANAGEMENT
Sample Matrix: OIL
Requisition Number:
Date Sample Received: 31-DEC-1991
Date Sampled: 31-DEC-1991

Solvents_F002

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 25-FEB-1992
QA File Number: NA
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
108-90-7	Chlorobenzene	NA			
	o-Dichlorobenzene	NA			
76-13-1	Freon 113	NA			
75-09-2	Methylene Chloride	NA			
127-18-4	Tetrachloroethene	NA			
71-55-6	1,1,1-Trichloroethane	NA			
79-00-5	1,1,2-Trichloroethane	NA			
79-01-6	Trichloroethene	NA			
75-69-4	Trichlorofluoromethane	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920102-011
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-8129
Customer: WASTE MANAGEMENT
Sample Matrix: OIL
Requisition Number:
Date Sample Received: 31-DEC-1991
Date Sampled: 31-DEC-1991

Solvents_F003

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 25-FEB-1992
QA File Number: NA
Dilution Factor: 4
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
67-64-1	Acetone	80U			
	n-Butyl alcohol	280U			
108-94-1	Cyclohexanone	NA			
141-78-6	Ethyl Acetate	120U			
	Ethylbenzenes	65J			
60-29-7	Ethyl ether	250			
67-56-1	Methanol	20U			
	4-Methyl-2-pentanone (MIBK)	40U			
	Xylenes	100U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920102-011
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-8129
Customer: WASTE MANAGEMENT
Sample Matrix: OIL
Requisition Number:
Date Sample Received: 31-DEC-1991
Date Sampled: 31-DEC-1991

Solvents_F005

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 25-FEB-1992
QA File Number: NA
Dilution Factor: 4
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	190			
	i-Butanol	50			
	2-Butanone (MEK)	80U			
75-15-0	Carbon Disulfide	NA			
	2-Ethoxy ethanol	80			
	2-Nitropropane	100U			
110-86-1	Pyridine	80U			
108-88-3	Toluene	40			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: U600B-2

Waste Stream Title: Parts Cleaning Solutions



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

1014889

ACTREL 4493L CLEANER

PAGE: 1
DATE PREPARED: MAY 8, 1992
MSDS NO.: 92864493

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: ACTREL 4493L CLEANER

CHEMICAL NAME:
Petroleum Hydrocarbon

CAS 64771-72-8

CHEMICAL FAMILY:
Aliphatic Hydrocarbon

PRODUCT DESCRIPTION:
Clear colorless liquid; mild hydrocarbon odor.

EMERGENCY TELEPHONE NUMBERS: EXXON CHEMICAL AMERICAS 713-870-6000
CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT INFORMATION

This product is not hazardous as defined in 29 CFR 1910.1200

SECTION 3 HEALTH INFORMATION & PROTECTION

NATURE OF HAZARD

EYE CONTACT:

Slightly irritating but does not injure eye tissue.

SKIN CONTACT:

Occasional brief contact with the liquid will not result in significant irritation unless evaporation is impeded.

Frequent or prolonged contact may irritate and cause dermatitis.

Low order of toxicity.

Skin contact may aggravate an existing dermatitis condition.

INHALATION:

High vapor/aerosol concentrations (greater than approximately 700 ppm, attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death.

Negligible hazard at ambient temperature (-18 to 38 Deg C; 0 to 100 Deg F)

INGESTION:

Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury, possibly progressing to death.

Low order of toxicity.

FIRST AID

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.



MATERIAL SAFETY DATA SHEET

ACTREL 4493L CLEANER

DATE PREPARED: MAY 8, 1992

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SKIN CONTACT:

Flush with large amounts of water; use soap if available.

Remove grossly contaminated clothing, including shoes, and launder before reuse.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

WORKPLACE EXPOSURE LIMITS

EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:

300 ppm total hydrocarbon based on composition.

PRECAUTIONS

SPECIAL PRECAUTIONS:

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

PERSONAL PROTECTION:

For open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.

Where contact may occur, wear safety glasses with side shields.

Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION:

The use of mechanical dilution ventilation is recommended whenever this product is used in a confined space, is heated above ambient temperatures, or is agitated.

SECTION 4 FIRE & EXPLOSION HAZARD

FLASHPOINT: 203 Deg F. METHOD: PMCC D-93 NOTE: Typical

FLAMMABLE LIMITS: LEL: 1.4 UEL: 8.9

AUTOIGNITION TEMPERATURE: 410 Deg F. NOTE: Approximately

GENERAL HAZARD:

Low Hazard, liquid can burn upon heating to temperatures at or above the flashpoint.

"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Empty drums should be completely drained, properly bunged and promptly re-turned to a drum reconditioner, or properly disposed of.



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
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ACTREL 4493L CLEANER

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FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use foam, dry chemical, or water spray to extinguish fire.
Avoid spraying water directly into storage containers due to danger of boilover.
This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.

HAZARDOUS COMBUSTION PRODUCTS:

No unusual

SECTION 5 SPILL CONTROL PROCEDURE

LAND SPILL:

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or with a suitable absorbent.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL:

Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 6 NOTES

HAZARD RATING SYSTEMS:

This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704	KEY
HEALTH	1	1	4 = Severe
FLAMMABILITY	1	1	3 = Serious
REACTIVITY	0	0	2 = Moderate
			1 = Slight
			0 = Minimal



MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001
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ACTREL 4493L CLEANER

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SECTION 7 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):

DOT HAZARD CLASS: Not regulated
DOT IDENTIFICATION NUMBER: Not Available

FLASHPOINT: 203 Deg F. METHOD: PMCC D-93 NOTE: Typical

TSCA:

This product is listed on the TSCA Inventory at CAS Registry Number 64771-72-8

CERCLA:

If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III:

Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:

Not Hazardous.

This product does not contain Section 313 Reportable Ingredients.

SECTION 8 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

SPECIFIC GRAVITY:

0.76 at 60

SOLUBILITY IN WATER, WT. % AT °F:

Insoluble

SP. GRAV. OF VAPOR, at 1 atm (Air=1):

Greater than 1.00

EVAPORATION RATE, n-Bu Acetate=1:

Negligible

VAPOR PRESSURE, mmHg at °F:

Less Than 1 at 100

VISCOSITY OF LIQUID, CST AT °F:

2 at 77

FREEZING/MELTING POINT, °F:

25 Pour Point ASTM D97

BOILING POINT, °F:

430 to 480 Approximately

SECTION 9 REACTIVITY DATA

STABILITY:

Stable

CONDITIONS TO AVOID INSTABILITY:

Not Applicable

HAZARDOUS POLYMERIZATION:

Will not occur

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS:

None

SECTION 10 STORAGE AND HANDLING



MATERIAL SAFETY DATA SHEET

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A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

ACTREL 4493L CLEANER

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DATE PREPARED: MAY 8, 1992
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STORAGE TEMPERATURE, °F:
Ambient
STORAGE/TRANSPORT PRESSURE, mmHg:
Atmospheric

LOADING/UNLOADING TEMPERATURE, °F:
Ambient
VISC. AT LOADING/UNLOADING TEMP., cST:
2

REVISION SUMMARY:

Since APRIL 12, 1992 this MSDS has been revised in Section(s):
4, 5, 6

REFERENCE NUMBER:
HDHA-C-25082

DATE PREPARED:
May 8, 1992

SUPERSEDES ISSUE DATE:
Apr 11 12, 1992

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 713-870-6884

THIS INFORMATION RELATES TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE AND LIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, LIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE. WE DO NOT ACCEPT LIABILITY FOR ANY LOSS OR DAMAGE THAT MAY OCCUR FROM THE USE OF THIS INFORMATION NOR DO WE OFFER WARRANTY AGAINST PATENT INFRINGEMENT.

Waste Stream Number: 600-3

Waste Stream Title: PPE and Related Solid

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920716-038 Project: WMGT RFD Customer Sample ID: RFD-10780
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 15-JUL-1992 Date Sample Received: 15-JUL-1992
Sampled By: B KELLEY Date Sample Completed: 4-DEC-1992
Material Description: COVERALLS & GLOVES

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-7060	Arsenic	5.5 N		mg/kg	TE SHOOK	25-NOV-1992	92080328
SW846-7470	Mercury	.02 NR		mg/kg	TE SHOOK	25-AUG-1992	92080306
SW846-7740	Selenium	<1.4		mg/kg	TE SHOOK	25-NOV-1992	92080328
SW846-7760	Silver	<0.2		MG/KG	EK GILBERT	30-NOV-1992	92080477
TSD515-500	Uranium (Waste)	<1.0		ug/g	CJ HOLBROOK	24-JUL-1992	92102230
TSD552-103	Barium	25.6 N*J		mg/kg	EK GILBERT	23-JUL-1992	92080349
	Cadmium	0.54 U		mg/kg	EK GILBERT	23-JUL-1992	92080349
	Chromium	4.1		mg/kg	EK GILBERT	23-JUL-1992	92080349
	Lead	41.3 *NJ		mg/kg	EK GILBERT	23-JUL-1992	92080349
T	Gross Alpha Activity (Soil)	<1		pCi/G	JJ SISLER	2-SEP-1992	92070881
	Gross Beta Activity (Soil)	#3		pCi/G	JJ SISLER	2-SEP-1992	92070881
TSD553-340	Technetium (Waste)	<0.4		pCi/G	JJ SISLER	6-AUG-1992	92070721

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	40.00	26.14	65.35
MERCURY	.200	0.025	12.50
SELENIUM	40.00	31.22	78.05
SILVER	.1	0.102	102.00
URANIUM (WASTE)	50	54.1	108.20

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is

less than 40% on both the original and the diluted sample.

T - Qualify data for the sample as estimated.

duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

O. A. Vita (Spectrochemistry/ICP Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

Date Approved: 4-DEC-1992

Waste Stream Number: 608-1

Waste Stream Title: Mercury Cleanup Materials

08-1

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Project:ER SubProject: 9547A

		Units	# Detects	MIN	MAX	AVG	STD DEV
Dissolved Solids	EPA 160.1	mg/L	2	8.00000	18.00000	13.00000	7.07107
Petroleum Hydroca	EPA 418.1	MG/L	2	2.44000	2.74000	2.59000	0.21213
Barium	SW846-6010-2	ug/L	1	1.10000	1.10000	1.10000	0.00000
Lead	SW846-6010-2	ug/L	1	212.00000	212.00000	212.00000	0.00000
Silver	SW846-6010-2	ug/L	1	2.10000	2.10000	2.10000	0.00000
Ethylene Chlorid	SW846-8260	ug/L	2	2.00000	4.00000	3.00000	1.41421

Project:ER SubProject: 9547E

		Units	# Detects	MIN	MAX	AVG	STD DEV
Moisture	ASTM-D2216	%	9	0.90000	89.60000	27.08889	33.03015
Petroleum Hydroca	EPA 418.1	mg/kg	9	110.00000	1290000.00000	338092.22222	549844.46096
Barium	SW846-6010-1	mg/kg	9	0.18000	625.00000	73.84000	206.86516
Lead	SW846-6010-1	mg/kg	4	0.38000	1.80000	0.97000	0.70019
Mercury	SW846-6010-1	mg/kg	9	0.22000	47.90000	8.40667	15.32207
Rad	SW846-6010-1	mg/kg	8	5.40000	182000.00000	23052.05000	64228.82915
Selenium	SW846-7060	mg/kg	4	1.10000	27.70000	10.00000	12.08911
Mercury	SW846-7470	mg/kg	7	3.30000	536.00000	253.30000	223.68501
Silver	SW846-7760A	mg/kg	2	4.70000	4.80000	4.75000	0.07071
Phenyl benzene	SW846-8260	ug/kg	2	25.00000	36.00000	30.50000	7.77817
Toluene	SW846-8260	ug/kg	2	60.00000	64.00000	62.00000	2.82843
p-Xylene	SW846-8260	ug/kg	4	39.00000	87.00000	62.00000	19.69772
m-Xylene	SW846-8260	ug/kg	4	18.00000	68.00000	41.00000	22.42023
Mercury, Total	TSD515-500	ug/g	8	0.20000	3.70000	1.28750	1.37263
Mass Alpha	TSD553-240	pCi/g	3	8.00000	71.00000	31.66667	34.29772
Mass Beta	TSD553-240	pCi/g	2	19.00000	39.00000	29.00000	14.14214

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3.46482

5.95000

8.40000

3.50000

pCi/g 2

TSD553-340

Chromium-99

Project:ER SubProject: 9547E

Analysis	Result	Units	Sample #	Cust #	Sample Completed	Analysis Completed	Activity Number
Moisture	12.9	%	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	76.6	%	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	0.9	%	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	6.6	%	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	31.6	%	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	8.1*	%	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	10.8	%	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	6.7	%	950516-171	000884003608130	7-Jun-1995	6-Jun-1995	ASTM-D2216
Moisture	89.6	%	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	ASTM-D2216
Petroleum Hydrocarbo	411000	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	16200	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	10600	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	6100J	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	7120	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	31700	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	1290000	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	1270000	mg/kg	950516-171	000884003608130	7-Jun-1995	6-Jun-1995	EPA 418.1
Petroleum Hydrocarbo	110	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	EPA 418.1
Sample Prep Metals	COMPLETE		950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Se Metals	COMPLETE		950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Si Metals	COMPLETE		950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-171	000884003608130	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep Metals	COMPLETE		950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SW846-3050A
Sample Prep AA Metal	COMPLETE		950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-171	000884003608130	7-Jun-1995	6-Jun-1995	SW846-3050AA
Sample Prep AA Metal	COMPLETE		950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SW846-3050AA
Barium	0.64	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	3.3	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	625	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	27.4	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	5.0	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	2.0	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	0.64	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	0.18	mg/kg	950516-171	000884003608130	7-Jun-1995	6-Jun-1995	SW846-6010-1
Barium	0.4	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SW846-6010-1
As	0.38	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1
As	1.3	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-6010-1

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Cadmium	1.8	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	2.1U	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	0.40	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	0.26U	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	0.28U	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	0.22U	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Cadmium	0.2U	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	1.2	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	4.5	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	3.1	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	3.8	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	47.9	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	13.1	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	1.5	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	0.22	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Chromium	0.34	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	5.4N	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	28.4N	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	18200N	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	16.4N	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	2130N	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	38.6N	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	184N	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	13.6N	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	1.5UN	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-6010-1
Lead	0.30U	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Lead	0.29U	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	27.7	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	7.5	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	3.7	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	1.1	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	0.30U	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	0.27U	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7060
Arsenic	0.30U	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-7060
Mercury	118	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	3.3	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	0.25U	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	313	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	536	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	6.8	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	527	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	269	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7470
Mercury	0.25U	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-7470
Selenium	0.50U	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.49U	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.39U	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.48U	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.47U	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.47U	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.50U	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.45U	mg/kg	950516-171	000884003060813	7-Jun-1995	6-Jun-1995	SUB46-7740
Selenium	0.50U	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SUB46-7740

	2.0U	mg/kg	950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-7760A
ilver	1.9U	mg/kg	950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	4.7	mg/kg	950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	4.8	mg/kg	950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	1.9U	mg/kg	950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	1.9U	mg/kg	950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	2.0U	mg/kg	950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	1.8U	mg/kg	950516-171	000884003608130	7-Jun-1995	6-Jun-1995	SW846-7760A
Silver	2.0U	mg/kg	950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SW846-7760A
1,2-Dichloroethene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichloroethene	<20J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<4J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,2-Dichlorotetraflu	<40J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
chlorotetraflu	<40J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
propene	<500J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
-Nitropropane	<500J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Nitropropane	<50J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
2-Nitropropane	<500J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<50J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Cyclohexanone	<500J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<2J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Dichlorodifluorometh	<2J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260

Dichlorometh	<20J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Dichlorodifluorometh	<20J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<20J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl Acetate	<200J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<5J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl ether	<50J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<1000J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Isobutyl alcohol	<10000J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<1000J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
n-Butyl Alcohol	<10000J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
OC							
1,1,1-Trichloroethan	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,1-Trichloroethan	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,2,2-Tetrachloroe	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,2,2-Tetrachloroe	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,2,2-Tetrachloroe	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,1,2,2-Tetrachloroe	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260

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1,1,2,2-Tetrachloroethane	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8268
1,1,2,2-Tetrachloroethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,1,2,2-Tetrachloroethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2,2-Tetrachloroethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2,2-Tetrachloroethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,1,2-Trichloroethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,1-Dichloroethene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichlorobenzene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SU846-8260
1,2-Dichloroethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SU846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SU846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SU846-8260

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benzene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,3-Dichlorobenzene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
1,3-Dichlorobenzene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
1,4-Dichlorobenzene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<100	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
2-Butanone	<1000	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<100	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
2-Methyl-2-pentanone	<1000	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<100	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
acetone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
acetone	<1000	ug/kg	950516-169	000884001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<1000	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
acetone	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
acetone	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
acetone	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260

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romethane	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
romethane	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromodichloromethane	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Bromodichloromethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Bromoform	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Bromoform	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Bromoform	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromomethane	<4	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Bromomethane	<40	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Br e	<40	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Br e	<40	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Ca Disulfide	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Disulfide	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Carbon Tetrachloride	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260

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ine	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Chlorobenzene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<4	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroethane	<40	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<2	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Chloroform	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Chloroform	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloroform	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<4	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Chloromethane	<40	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<2	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Dibromochloromethane	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	<2	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	36J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	25J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Ethyl benzene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
neon 113	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
neon 113	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
neon 113	<20	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
rec	<2	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
rec	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260

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F	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
F 13	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 113	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 113	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<4J	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Freon 114	<40J	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Methylene Chloride	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Tetrachloroethene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Tetrachloroethene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Tetrachloroethene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
et thene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
et ethene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
etrachloroethene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
etrachloroethene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
etrachloroethene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
etrachloroethene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
oluene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
oluene	60	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	64	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
oluene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
richloroethene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
richloroethene	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
richloroethene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
richlorofluorometha	<40	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richlorometha	<40	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
richlorometha	<40	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260

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uorometha	<4	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260.
Trichlorofluorometha	<40	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Trichlorofluorometha	<40	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Trichlorofluorometha	<40	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Trichlorofluorometha	<40	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Trichlorofluorometha	<40	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<1	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
Vinyl Chloride	<10	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
cis-1,2-Dichloroethe	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
m,p-Xylene	39J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
m,	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
m,l	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
m,p-Xylene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
m,p-Xylene	59J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
m,p-Xylene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
m,p-Xylene	87J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
m,p-Xylene	63J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
m,p-Xylene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	18J	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	28J	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
o-Xylene	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
o-Xylene	68J	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	50J	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
o-Xylene	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-158	000851001060813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-165	000221001060813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-166	000885001060813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<2	ug/kg	950516-167	000199001060813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-168	000884002060813	7-Jun-1995	25-May-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-169	000884001060813	7-Jun-1995	25-May-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-170	000884003060813	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-171	000884003608130	7-Jun-1995	5-Jun-1995	SW846-8260
trans-1,2-Dichloroet	<20	ug/kg	950516-172	00170900160813	7-Jun-1995	5-Jun-1995	SW846-8260

ES&H ANALYTICAL SERVICES
Data Report

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(TPH)	COMPLETE		950516-158	000851001060813	7-Jun-1995	6-Jun-1995	SW846-9071A
(TPH)	COMPLETE		950516-165	000221001060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-166	000885001060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-167	000199001060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-168	000884002060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-169	000884001060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-170	000884003060813	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-171	000884003608130	7-Jun-1995	6-Jun-1995	SW846-9071A
Sample Prep (TPH)	COMPLETE		950516-172	00170900160813	7-Jun-1995	6-Jun-1995	SW846-9071A
Uranium, Total	0.4	UG/G	950516-158	000851001060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	0.3	UG/G	950516-165	000221001060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	0.6	UG/G	950516-166	000885001060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	1.9J	ug/g	950516-167	000199001060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	2.9	UG/G	950516-168	000884002060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	3.7	UG/G	950516-169	000884001060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	0.3	UG/G	950516-170	000884003060813	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	0.2	UG/G	950516-171	000884003608130	7-Jun-1995	7-Jun-1995	TS0515-500
Uranium, Total	<0.8	ug/g	950516-172	00170900160813	7-Jun-1995	7-Jun-1995	TS0515-500
Gross Alpha	<4	pCi/g	950516-158	000851001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	<4	pCi/g	950516-165	000221001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	<5	pCi/g	950516-166	000885001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	8	pCi/g	950516-167	000199001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	71	pCi/g	950516-168	000884002060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	16	pCi/g	950516-169	000884001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	<4	pCi/g	950516-170	000884003060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	<4	pCi/g	950516-171	000884003608130	7-Jun-1995	29-May-1995	TS0553-240
Gross Alpha	<4	pCi/g	950516-172	00170900160813	7-Jun-1995	29-May-1995	TS0553-240
Gr	<10	pCi/g	950516-158	000851001060813	7-Jun-1995	29-May-1995	TS0553-240
Gr	<10	pCi/g	950516-165	000221001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	<10	pCi/g	950516-166	000885001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	<10	pCi/g	950516-167	000199001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	<10	pCi/g	950516-168	000884002060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	39	pCi/g	950516-169	000884001060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	19	pCi/g	950516-170	000884003060813	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	<10	pCi/g	950516-171	000884003608130	7-Jun-1995	29-May-1995	TS0553-240
Gross Beta	<10	pCi/g	950516-172	00170900160813	7-Jun-1995	29-May-1995	TS0553-240
Technetium-99	<0.5	pCi/g	950516-158	000851001060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.4	pCi/g	950516-165	000221001060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.5	pCi/g	950516-166	000885001060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.2	pCi/g	950516-167	000199001060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	3.5	pCi/g	950516-168	000884002060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	8.4	pCi/g	950516-169	000884001060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.4	pCi/g	950516-170	000884003060813	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.5	pCi/g	950516-171	000884003608130	7-Jun-1995	29-May-1995	TS0553-340
Technetium-99	<0.2	pCi/g	950516-172	00170900160813	7-Jun-1995	29-May-1995	TS0553-340
total =	558						

Waste Stream Number: 608-2

Waste Stream Title: Oil

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:
01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:
AMERICAN BURDICK & JACKSON
1953 SOUTH HARVEY STREET
MUSKEGON
MI

49442
PHONE: PHONE: 616-726-3171
EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 176 F	NOTE: 80'C, 760 MM HG.
Melting Point. . . .	NG	
Freezing Point. . . .	EQ 41.9 F	NOTE: 5.5'C.
Pour Point.	NG	
Softening Point. . .	NG	
Specific Gravity . .	EQ .879	NOTE: @ 20'C.
Vapor Pressure . . .	EQ 74.6	NOTE: MM HG @ 20'C.
Vapor Density. . . .	EQ 2.8	
Percent Volatiles. .	~ 100	
Evaporation Rate . .	~ 3	NOTE: BUAC=1.
pH	NG	
Molecular Weight . .	EQ 78.11	
Viscosity.	NG	
Solubility in Water. @ 25C	0.18%.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	EQ 12.2 F	NOTE: -11'C, TCC.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	EQ 1043.6 F	NOTE: 562'C.
Explosive/Flammable Limits		
Lower (LEL).	EQ 1.3	
Upper (UEL).	EQ 7.1	

Shipping Regulations

UN/NA Number. UN1114
D.O.T. Hazard Class. . . FLAMMABLE LIQUID
Label NOT GIVEN
Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

NZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

USUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

AMERICAN BURDICK & JACKSON'S DISCLAIMER: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. American Burdick & Jackson makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. American Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

Waste Stream Number: 608-3

Waste Stream Title: Mercury, Oil, Water, and Sand

W
4W

Portsmouth Gaseous Diffusion Plant
Quality and Technical Services Division
Results of Analyses

AnalIS ID: 910201-013 Project: WMGT RFD Customer Sample ID: RFD-209-1
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 1-FEB-1991 Date Sample Received: 1-FEB-1991
Sampled By: SA MOORE Date Sample Completed: 18-MAR-1991
Material Description: MAY CONTAIN Hg CONTAMINATION!

Analytical Proc. No.	Analysis	Result	Units	Analyst	Date Completed
EC-013	Mercury (Water)	2.4	mg/L	EL SIMPSON	18-MAR-1991
TSD515-500	Uranium (Waste)	<1.0	ug/g	CJ HOLBROOK	4-MAR-1991

Laboratory Manager: W. R. Waugh (Environmental and Industrial Hygiene Laboratory)
Date Approved: 19-MAR-1991

Portsmouth Gaseous Diffusion Plant
Quality and Technical Services Division
Results of Analyses

AnalIS ID: 910201-014 Project: WNGT RFD Customer Sample ID: RFD-209-2
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 1-FEB-1991 Date Sample Received: 1-FEB-1991
Sampled By: SA MOORE Date Sample Completed: 18-MAR-1991
Material Description: MAY CONTAIN Hg CONTAMINATION!

Analytical Proc. No.	Analysis	Result	Units	Analyst	Date Completed
EC-013	Mercury (Water)	.10	mg/L	EL SIMPSON	18-MAR-1991
TSD515-500	Uranium (Waste)	<1.0	ug/g	CJ HOLBROOK	4-MAR-1991

Laboratory Manager: W. R. Waugh (Environmental and Industrial Hygiene Laboratory)
Date Approved: 19-MAR-1991

0000006

W
4W

Portsmouth Gaseous Diffusion Plant
Quality and Technical Services Division
Results of Analyses

AnalIS ID: 910201-015 Project: WMGT RFD Customer Sample ID: RFD-209-3
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 1-FEB-1991 Date Sample Received: 1-FEB-1991
Sampled By: SA MOORE Date Sample Completed: 26-MAR-1991
Material Description: MAY CONTAIN Hg CONTAMINATION!

Analytical Proc. No.	Analysis	Result	Units	Analyst	Date Completed
EC-013	Mercury (Water)	.2	mg/L	EL SIMPSON	18-MAR-1991
TSD515-500	Uranium (Waste)	<1.0	ug/g	CJ HOLBROOK	4-MAR-1991

Laboratory Manager: W. R. Waugh (Environmental and Industrial Hygiene Laboratory)
Date Approved: 26-MAR-1991

0000006

Waste Stream Number: 611-1

Waste Stream Title: Oil and Filters

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 930827-064 Project: WMG T RFD Requisition Number: 002721
Customer Sample ID: RFD16460 Customer: ENV./WASTE MGT.
Date Sampled: 26-AUG-1993 Date Sample Received: 27-AUG-1993
Sampled By: BK KELLEY Date Sample Completed: 29-SEP-1993
Material Description: X611 FILTER HOUSE

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-6010	Arsenic	2.8U		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Barium	1.1		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Cadmium	1.4		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Chromium	0.86U		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Lead	11.1		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Selenium	4.3U		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Silver	0.92N		MG/KG	TE SHOOK	7-SEP-1993	93080660
SW846-7470	Mercury	<.025N		MG/KG	EK GILBERT	16-SEP-1993	93080697
TSD515-500	Uranium (Waste)	<1.0		UG/G	SK BENNINGTON	21-SEP-1993	93101062
	Gross Alpha Activity	R <0.1		pCi/mL	JJ SISLER	8-SEP-1993	93071385
	Gross Beta Activity	R <0.3		pCi/mL	JJ SISLER	8-SEP-1993	93071385
TSD553-380	Technetium	<0.9		pCi/mL	JJ SISLER	7-SEP-1993	93071377

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	35.09	31.3114	89.23
BARIUM	35.09	30.2807	86.29
CADMIUM	35.09	29.7254	84.71
CHROMIUM	35.09	29.4386	83.89
LEAD	35.09	27.0851	77.19
MERCURY	.144	0.049	34.03
SELENIUM	35.09	33.4412	95.30
SILVER	35.09	1.5756	4.49
URANIUM (WASTE)	9.96	7.78	78.15

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial

dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

fy data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposes only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

+ - Correlation coefficient for MSA is less than 0.995.

- The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

doI condensation product.

L - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

D. E. Boyd (Spectrochemistry/ICP Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

Date Approved: 29-SEP-1993

Waste Stream Number: 611-2

Waste Stream Title: Mercury

PORTS MSDS #: 341

PRODUCT: STANDARD, MERCURY 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Hg

KEYWORD: STANDARD

PORTS NUMBER: 00190035-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH

03109
PHONE: 603-622-7660
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point	~ 212 F	NOTE: ~100'C.
Melting Point	~ 32 F	NOTE: ~0'C.
Freezing Point	NG	
Pour Point	NG	
Softening Point	NG	
Specific Gravity	~ 1	
Vapor Pressure	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles	~ 99	NOTE: @ 21'C.
Evaporation Rate	NA	NOTE: NOT APPLI/NOT AVAIL.
pH	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight	EQ 200.59	NOTE: FORMULA WT.
Viscosity	NG	
Solubility in Water	COMPLETE (100%).	
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup	NG	
Fire Point	NG	
Auto Ignition	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL)	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL)	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number NG
D.O.T. Hazard Class NG
Label NOT GIVEN
Proper Shipping Name CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

===== Component Information =====

MERCURY

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.0
C.A.S. No.: 7439976

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Mercury Plasma Emission Standard - 10,000 g/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Hg

FORMULA WT.: 200.59

CAS NO.: N/A

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

----- SECTION II - COMPONENTS -----

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, kidney dysfunction

CHRONIC EFFECTS: None identified

TARGET ORGANS: Respiratory system, eyes, skin, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting If conscious, give water, milk, or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Nitric Acid

TSCA INVENTORY: Yes

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained

breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; move from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of user or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label. VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: 616-1

Waste Stream Title: Oil and Filters

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F	NOTE: 80'C, 760 MM HG.
Melting Point. . . . NG	
Freezing Point. . . . EQ 41.9 F	NOTE: 5.5'C.
Pour Point. . . . NG	
Softening Point. . . NG	

Specific Gravity . . EQ .879	NOTE: @ 20'C.
Vapor Pressure . . . EQ 74.6	NOTE: MM HG @ 20'C.
Vapor Density. . . . EQ 2.8	
Percent Volatiles. . ~ 100	
Evaporation Rate . . ~ 3	NOTE: BUAC=1.
pH NG	
Molecular Weight . . EQ 78.11	
Viscosity. NG	
Solubility in Water. @ 25C 0.18%.	

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 12.2 F	NOTE: -11'C, TCC.
Flash Point, Open Cup . . . NG	
Fire Point. NG	
Auto Ignition. EQ 1043.6 F	NOTE: 562'C.
Explosive/Flammable Limits	
Lower (LEL). EQ 1.3	
Upper (UEL). EQ 7.1	

Shipping Regulations

UN/NA Number. UN1114
D.O.T. Hazard Class. . . FLAMMABLE LIQUID
Label NOT GIVEN
Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

BNZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

USUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

AMERICAN BURDICK & JACKSON'S DISCLAIMER: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. American Burdick & Jackson makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. American Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

Waste Stream Number: 616-2

Waste Stream Title: Soil/Sludge

616-2

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 911215-042 Project: WMGT RFD Customer Sample ID: RFD-7818
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 6-DEC-1991 Date Sample Received: 9-DEC-1991
Sampled By: CP MOORE Date Sample Completed: 24-JUN-1992
Material Description: DIRT & GRASS

Analytical Proc. No.	Preparation Proc. No.	Analysis	Result	Limit Of Error	Units	Date Analyzed	QA File Number
		Assay (% U-235, Waste)	NA		% U-235	7-JAN-1992	NA
EC-006		Arsenic	ND		ng/L		
EC-013		Mercury	ND		ng/L		
EC-015		Selenium	ND		ng/L		
EC-016		Silver	ND		ng/L		
SW846-3050		Barium	49.0 *E		ng/kg	22-JAN-1992	92080032
		Cadmium	5.39 *		ng/kg	22-JAN-1992	92080032
		Chromium	866 *E		ng/kg	22-JAN-1992	92080032
		Lead	53.5 *E		ng/kg	22-JAN-1992	92080032
TSD515-500		Uranium (Waste)	1.2		UG/G	3-JAN-1992	92100002
TSD553-340		Technetium (Waste)	3.0		pci/g	14-JAN-1992	92070037

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
BARIUM	190	213.	112.11
CADMIUM	190	202.	106.11
CHROMIUM	190	181.	95.26
LEAD	190	153.	80.26
URANIUM (WASTE)	10	11.4	114.00

***** Comments from the Radiochemistry Laboratory *****

Uranium to low for assay determination by gamma

***** Comments from the Spectrochemistry/ICP Laboratory *****

* - Duplicate analysis not within control limits.

Average of duplicate aliquots reported.

As estimated. The E flag is the result of an ICP serial dilution

is not within control limits.

Inorganic Data Reporting Qualifiers and Flags:

C - Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but () than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Flagging "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
O. A. Vita (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)

Date Approved: 24-JUN-1992

Waste Stream Number: 616-3

Waste Stream Title: Filter Cloth and PPE

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 920112-010 Project: WMGT RFD Customer Sample ID: RFD-7836
 Customer: WASTE MANAGEMENT Requisition Number:
 Date Sampled: 9-JAN-1992 Date Sample Received: 9-JAN-1992
 Sampled By: B KELLEY Date Sample Completed: 4-AUG-1992
 Material Description: FILTER CLOTH MEDIA

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
	Assay (% U-235, Waste)	NA		% U-235	BW SHORT	24-FEB-1992	NA
	Barium	2.3		mg/kg	AL SHULTZ	20-JAN-1992	92080049
	Cadmium	0.01 U		mg/kg	AL SHULTZ	20-JAN-1992	92080049
	Chromium	159 R		mg/kg	AL SHULTZ	20-JAN-1992	92080049
	Lead	0.02 U		mg/kg	AL SHULTZ	20-JAN-1992	92080049
EC-006	Arsenic	ND		mg/L	EL SIMPSON	4-AUG-1992	ELS
EC-013	Mercury	ND		mg/L	EL SIMPSON	4-AUG-1992	ELS
EC-015	Selenium	ND		mg/L	EL SIMPSON	4-AUG-1992	ELS
	Silver	ND		mg/L	EL SIMPSON	4-AUG-1992	ELS
TSD515-500	Uranium (Waste)	<1.0		ug/g	CJ HOLBROOK	20-JAN-1992	92100205
TSD553-340	Technetium (Waste)	0.8		pci/g	BJ STANLEY	25-JAN-1992	92070055

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
URANIUM (WASTE)	50	55.5	110.97

***** Comments from the Radiochemistry Laboratory *****

Uranium too low for assay determination by gamma

***** Comments from the Spectrochemistry/ICP Laboratory *****

ND -- not done, past holding time.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND Not detected.
- Not reported.
- NA Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
O. A. Vita (Spectrochemistry/ICP Laboratory)
D. K. Perez (Environmental and Industrial Hygiene Laboratory)
Date Approved: 4-AUG-1992

Waste Stream Number: Pump-1

Waste Stream Title: Mercury Spill Cleanup

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 971211-077 Project: ER 9762E Requisition Number: 53965
Customer Sample ID: VER07260001 Customer: ENV RESTORATION
Date Sampled: 11-DEC-1997 09:40 Date Sample Received: 11-DEC-1997
Sampled By: RJ STANLEY Date Sample Completed: 5-JAN-1998
Material Description: *pump 1*

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			LD DRYDEN	30-DEC-1997	123097-073
SW846-1311	TCLP Extraction	COMPLETE			LD DRYDEN	23-DEC-1997	97170126

Laboratory Manager: C. J. Van Meter (TCLP Laboratory)
Date Approved: 5-JAN-1998

***** COMMENT PAGE *****
***** 971211-077 *****

**** Comments from the TCLP Laboratory ****

TCLP_Method 1311/6010A

Selenium exhibited a zero percent spike recovery for the MS and MSD.
However, the SW846-3010A prep spike was within limits.

Organic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
 - . - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 971211-077
Laboratory: TCLP Laboratory
File ID: 97170126
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER07260001
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 53965
Date Sample Received: 11-DEC-1997
Date Sampled: 11-DEC-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 23-DEC-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-DEC-1997
QA File Number: 98080001
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.234U			
7440-39-3	Barium	0.1498N*			
7440-43-9	Cadmium	0.0288			
7440-47-3	Chromium	0.1008			
7439-92-1	Lead	0.9768			
7782-49-2	Selenium	0.359U*			
7440-22-4	Silver	0.049U			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 971211-077
Laboratory: TCLP Laboratory
File ID: 97170126
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER07260001
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 53965
Date Sample Received: 11-DEC-1997
Date Sampled: 11-DEC-1997

TCLP_HG_RPT

Date Extracted/Prepared: 23-DEC-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-DEC-1997
QA File Number: 97080971
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.139		

Waste Stream Number: Pump-2

Waste Stream Title: Cooling Tower Curtains

Waste stream Pump-2 consists of cooling tower curtains. This waste is historically hazardous for chromium.

◆ PORTS MSDS #: 335

PRODUCT: STANDARD, CHROMIUM 1000PPM IN 10% NITRIC

LOT NUMBER:

FORMULA: Cr

KEYWORD: STANDARD

PORTS NUMBER: 00190029-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH

03109
PHONE: 603-622-7660
EMERGENCY PHONE:

=== Physical/Chemical Characteristics ===

Boiling Point.	~ 212 F	NOTE: ~100'C.
Melting Point.	~ 32 F	NOTE: ~0'C.
Freezing Point.	NG	
Pour Point.	NG	
Softening Point.	NG	
Specific Gravity.	~ 1	
Vapor Pressure.	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density.	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles.	~ 99	NOTE: @ 21'C.
Evaporation Rate.	NA	NOTE: NOT APPLI/NOT AVAIL.
pH.	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight.	EQ 52.00	
Viscosity.	NG	
Solubility in Water.	COMPLETE (100%).	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID, HYDROCHLORIC ACID ODOR.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup.	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup.	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG
D.O.T. Hazard Class. . . NG
Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

=====

For Further/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 3/09/95

===== Component Information =====

CHROMIUM

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ .1
C.A.S. No.: 7440473

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product %: EQ 5
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE..

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Chromium Plasma Emission Standard - 1000 (micro)g/ml

COMMON SYNONYMS: N/A

PRODUCT NO.: PCRN-100, PCRN-500

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Cr

FORMULA WT.: 52.00

NIOSH/RTECS NO.: MW4025000

PRODUCT USE: Laboratory Reagent

R L N DATE: 03/09/95

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A
LOWER: N/A

CARCINOGENICITY:

NTP: Yes
IARC: Yes
Z LIST: Yes
OSHA REG: Yes

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surr{1{ding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in itive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

TLV LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1 HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: This product contains Chromium, which is listed as a NTP human carcinogen and an IARC human carcinogen (Group 1).

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system, severe irritation or burns of respiratory system, pulmonary edema, lung inflammation

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, may be fatal nausea, vomiting, kidney disfunction, paralysis

CHRONIC EFFECTS: None identified

TARGET ORGANS: Liver, kidneys, respiratory system, lungs, eyes, skin, teeth, lymphatic system

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None identified

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, and the victim is conscious, give large amounts of milk, milk of magnesia or whites of eggs beaten with H2O and induce vomiting.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediatetly flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes
CHRONIC: Yes
FLAMMABILITY: No
PRESSURE: No
REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Chromium (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Chromium and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS: For products sold in the state of California, the state requires that we provide to users and their employees the following message: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

= SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

HAZARDOUS POLYMERIZATION: Will not occur

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove foam area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EP' HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

= = SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Suitable for any general chemical storage area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of user or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label. VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: Pump-3

Waste Stream Title: Oil

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 176 F	NOTE: 80'C, 760 MM HG.
Melting Point. . . .	NG	
Freezing Point. . . .	EQ 41.9 F	NOTE: 5.5'C.
Pour Point.	NG	
Softening Point. . .	NG	

Specific Gravity . .	EQ .879	NOTE: @ 20'C.
Vapor Pressure . . .	EQ 74.6	NOTE: MM HG @ 20'C.
Vapor Density. . . .	EQ 2.8	
Percent Volatiles. .	~ 100	
Evaporation Rate . .	~ 3	NOTE: BUAC=1.
pH	NG	
Molecular Weight . .	EQ 78.11	
Viscosity.	NG	
Solubility in Water. @ 25C	0.18%.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	EQ 12.2 F	NOTE: -11'C, TCC.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	EQ 1043.6 F	NOTE: 562'C.
Explosive/Flammable Limits		
Lower (LEL).	EQ 1.3	
Upper (UEL).	EQ 7.1	

Shipping Regulations

UN/NA Number.	UN1114
D.O.T. Hazard Class. . .	FLAMMABLE LIQUID
Label	NOT GIVEN
Proper Shipping Name . .	BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

 BENZENE
 OSHA PEL (PPM): 1
 OSHA PEL (MG/M3):
 ACGIH TLV (PPM): 10
 ACGIH TLV (MG/M3):
 STEL (PPM): 25
 STEL (MG/M3):
 Product %: ~ 100
 C.A.S. No.: 71432

Note:

 OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

 AMERICAN BURDICK & JACKSON
 SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
 1953 SOUTH HARVEY STREET
 MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

USUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

AMERICAN BURDICK & JACKSON'S DISCLAIMER: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. American Burdick & Jackson makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. American Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

Waste Stream Number: 700-1

Waste Stream Title: Chromic Acid Tank Closure Waste

ES&H ANALYTICAL SERVICES
Data Summary Report
Project:ER SubProject: 9748E

Analysis	Procedure	Units	Detects	MIN	MAX	AVG	STD DEV
Barium	1311/6010-2	mg/L	10	0.04700	0.07300	0.05720	0.00830
Cadmium	1311/6010-2	mg/L	5	0.00200	0.02700	0.01600	0.01198
Chromium	1311/6010-2	mg/L	10	0.01500	44.80000	8.79710	17.78786
Copper	1311/6010-2	mg/L	7	0.01000	0.97100	0.27586	0.34000
Lead	1311/6010-2	mg/L	8	0.07100	652.00000	271.74938	295.80776
Nickel	1311/6010-2	mg/L	10	0.01000	1.08000	0.44810	0.44942
Silver	1311/6010-2	mg/L	3	0.00600	0.05400	0.02267	0.02715
Zinc	1311/6010-2	mg/L	8	0.09900	0.36000	0.15588	0.08601
Fluoride	EPA 340.2	ug/g	2	25.60000	30.50000	28.05000	3.46482
Aluminum	SW846-6010-5	MG/KG	4	62.10000	4540.00000	2248.77500	2453.89143
A	SW846-6010-5	MG/KG	1	69.10000	69.10000	69.10000	0.00000
B	SW846-6010-5	MG/KG	4	0.53000	89.40000	44.60750	49.17416
Cadmium	SW846-6010-5	MG/KG	3	3.00000	57.40000	21.33333	31.23609
Calcium	SW846-6010-5	MG/KG	3	1310.00000	112000.00000	72103.33333	61473.75077
Chromium	SW846-6010-5	MG/KG	4	311.00000	6130.00000	3895.25000	2643.01159
Cobalt	SW846-6010-5	MG/KG	3	7.80000	38.50000	18.46667	17.36155
Copper	SW846-6010-5	MG/KG	4	53.20000	1370.00000	871.05000	618.62181
Iron	SW846-6010-5	MG/KG	4	181.00000	304000.00000	79405.25000	149761.74729
Lead	SW846-6010-5	MG/KG	3	282.00000	31000.00000	10529.66667	17727.83310
Lithium	SW846-6010-5	MG/KG	2	3.50000	3.50000	3.50000	0.00000
Magnesium	SW846-6010-5	MG/KG	4	222.00000	5020.00000	2663.50000	2511.38601
Manganese	SW846-6010-5	MG/KG	4	3.90000	1760.00000	508.22500	836.80695
Nickel	SW846-6010-5	MG/KG	4	25.00000	1010.00000	583.50000	471.01203

ES&H ANALYTICAL SERVICES
Data Summary Report
Project:ER SubProject: 9748E

Analysis	Procedure	Units	Detects	MIN	MAX	AVG	STD DEV
Potassium	SW846-6010-5	MG/KG	3	55.80000	1160.00000	761.93333	613.18285
Silver	SW846-6010-5	MG/KG	4	0.75000	64.50000	20.43750	29.59334
Sodium	SW846-6010-5	MG/KG	4	1090.00000	7090.00000	5432.50000	2898.80866
Thallium	SW846-6010-5	MG/KG	1	297.00000	297.00000	297.00000	0.00000
Titanium	SW846-6010-5	MG/KG	3	7.20000	275.00000	176.06667	146.95990
Vanadium	SW846-6010-5	MG/KG	3	10.70000	62.80000	28.20000	29.96515
Zinc	SW846-6010-5	MG/KG	4	15.50000	208.00000	136.62500	86.84793
Cr+6	SW846-7196M	mg/kg	2	555.00000	663.00000	609.00000	76.36753
Mercury	SW846-7470A	mg/kg	3	0.06200	0.09600	0.07500	0.01836
PCB-1254	SW846-8080-2	ug/g	2	4.10000	4.10000	4.10000	0.00000
D phthalate	SW846-8270B	ug/kg	3	501.00000	1070.00000	754.66667	289.469 ^{EE}
bis(2-Ethylhexyl)phthalate	SW846-8270B	ug/kg	1	2420.00000	2420.00000	2420.00000	0.00
pH	SW846-9045C	pH units	10	5.75000	10.77000	7.72500	1.85399
Gross Alpha	TSD553-280	pCi/g	2	43.00000	43.00000	43.00000	0.00000
Gross Beta	TSD553-280	pCi/g	4	16.00000	113.00000	63.00000	48.15946
Technetium	TSD553-385	pCi/g	4	8.70000	76.90000	49.40000	31.61824
Ac-228	TSD553-440	pCi/g	2	1.04000	1.14000	1.09000	0.07071
Bi-214	TSD553-440	pCi/g	2	1.22000	1.32000	1.27000	0.07071
Pb-210	TSD553-440	pCi/g	2	1.48000	2.07000	1.77500	0.41719
Pb-212	TSD553-440	pCi/g	2	0.65000	0.73000	0.69000	0.05657
Pb-214	TSD553-440	pCi/g	2	1.34000	1.65000	1.49500	0.21920
Potassium-40	TSD553-440	pCi/g	1	2.06000	2.06000	2.06000	0.00000
Radium-224	TSD553-440	pCi/g	2	2.53000	3.62000	3.07500	0.77075

ES&H ANALYTICAL SERVICES
Data Summary Report
Project:ER SubProject: 9748E

Analysis	Procedure	Units	Detects	MIN	MAX	AVG	STD DEV
Radium-226	TSD553-440	pCi/g	2	1.34000	1.65000	1.49500	0.21920
Radium-228	TSD553-440	pCi/g	3	0.58000	1.14000	0.92000	0.29866
Th-230	TSD553-440	pCi/g	1	13.40000	13.40000	13.40000	0.00000
Th-231	TSD553-440	pCi/g	2	1.16000	1.17000	1.16500	0.00707
Th-232	TSD553-440	pCi/g	1	27.40000	27.40000	27.40000	0.00000
Th-234	TSD553-440	pCi/g	2	4.14000	4.68000	4.41000	0.38184
U-234	TSD553-440	pCi/g	1	30.60000	30.60000	30.60000	0.00000
U-235	TSD553-440	pCi/g	2	0.95000	1.04000	0.99500	0.06364
Np-237	TSD553-710T	pCi/g	2	0.09400	0.27000	0.18200	0.12445
Plutonium-239/240	TSD553-710T	pCi/g	1	0.03000	0.03000	0.03000	0.00000
Th	TSD553-710TH	pCi/g	2	0.36000	0.38000	0.37000	0.01414
Th -230	TSD553-710TH	pCi/g	3	0.00500	1.90000	1.13500	0.99884
Thorium-231	TSD553-710TH	pCi/g	3	0.07700	0.73000	0.49233	0.36094
Thorium-232	TSD553-710TH	pCi/g	2	0.10000	0.10000	0.10000	0.00000
Thorium-234	TSD553-710TH	pCi/g	4	0.04000	4.30000	2.43500	1.94548
% U-235	TSD553-710U	%	3	2.20000	2.80000	2.53333	0.30551
U-234	TSD553-710U	pCi/g	4	0.13000	14.00000	6.93250	7.07905
U-235	TSD553-710U	pCi/g	3	0.07700	0.73000	0.49233	0.36094
U-236	TSD553-710U	pCi/g	2	0.09700	0.11000	0.10350	0.00919
U-238	TSD553-710U	pCi/g	4	0.04000	4.30000	2.14500	2.16557
Uranium	TSD553-710U	ug/g	4	0.12000	13.00000	6.45500	6.48681
TOX	XP4TS-0A7020	ug/g	3	15.00000	390.00000	248.33333	203.61320

Waste Stream Number: 700-2

Waste Stream Title: Cleaning Tank Solution

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnaLIS ID: 950906-060

Project: P103 ACTA

Customer Sample ID: RFD-1711-4

Customer: APPLGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 6-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	1.61E2		+/- 8.9E0	dpm/ml	TL DANIELS	TAS-4935	6-SEP-1995

Replicate Results of Analysis

Analysis	Results	Replicate Results	RPD
Total Activity (Screen)	1.61E2	1.88E2	15.5

Spike Recovery Data

A	Unspike Result	Amount Spike	Spike Result	Units	Amount Recovered	Percent Recovered
***** Radiochemistry Laboratory *****						
TOTAL ACTIVITY (SCREEN)	321.78	376.60	693.01	dpm/ml	371.23	98.6

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnaLIS ID: 950906-001 Project: ER 9579C Customer Sample ID: RFD17114
 Customer: ENV RESTORATION Requisition Number: 017878
 Date Sampled: 31-AUG-1995 20:50 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	10.05		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	<0.9		pCi/ml	JP BREWSTER	13-SEP-1995	95071340
TSD553-700	% U-235	NA	NA	%	CD GOOD	11-SEP-1995	95071327
	Uranium	0.15	0.036	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)

Date Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-001 *****

Comments from the Organic Analytical Services *****

SW846-8260

Sample was found to be unpreserved (pH=11).

Definition Page for Qualifiers/Flags

950906-001

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
relation coefficient for MSA is less than 0.995.
- ~ - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-001
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD17114
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017878
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 12-SEP-1995
QA File Number: 95160912A3
Dilution Factor: 1.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	650	100-41-4	Ethyl benzene	2U
71-43-2	Benzene	2	76-13-1	Freon 113	2U
75-27-4	Bromodichloromethane	2U	76-14-2	Freon 114	4U
75-25-2	Bromoform	2U	108-10-1	4-Methyl-2-pentanone	100U
74-83-9	Bromomethane	4U	75-09-2	Methylene Chloride	5
78-93-3	2-Butanone	200	79-34-5	1,1,2,2-Tetrachloroethane	2U
75-15-0	Carbon Disulfide	2U	127-18-4	Tetrachloroethene	2U
56-23-5	Carbon Tetrachloride	2U	108-88-3	Toluene	2U
108-90-7	Chlorobenzene	2U	71-55-6	1,1,1-Trichloroethane	2U
75-00-3	Chloroethane	4U	79-00-5	1,1,2-Trichloroethane	2U
67-66-3	Chloroform	2U	79-01-6	Trichloroethene	2U
74-87-3	Chloromethane	4U	75-69-4	Trichlorofluoromethane	4U
124-48-1	Dibromochloromethane	2U	75-01-4	Vinyl Chloride	1U
106-46-7	1,4-Dichlorobenzene	2U	1330-20-7	m,p-Xylene	2U
95-50-1	1,2-Dichlorobenzene	2U	95-47-6	o-Xylene	2U
541-73-1	1,3-Dichlorobenzene	2U			
75-34-3	1,1-Dichloroethane	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	2U			
156-59-2	cis-1,2-Dichloroethene	2U			
156-60-5	trans-1,2-Dichloroethene	2U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-001

Laboratory: Organic Analytical Services

Sample Matrix: LIQUID WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

Customer Sample ID: RFD17114

Customer: ENV RESTORATION

File ID: _____

Date Received: 5-SEP-1995

Date Analyzed: 12-SEP-1995

Concentration Units: ug/L

Number TICs found: 9

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 95-63-6	1,2,4-Trimethylbenzene		4	
2.	Octane	16.2	7	J
3. 2216-33-3	3-Methyloctane	16.5	7	J
4.	nonane	17.2	30	J
5.	3-methylnonane	19.0	10	J
6.	Diethylcyclohexane	19.3	8	J
7.	decane	19.6	800	J
8.	undecane	21.8	30	J
9.	nonadecane	20.1	30	J
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 950906-001
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD17114
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017878
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Date Printed: 22-SEP-1995 15:43:04

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-050 Project: P103 003 Customer Sample ID: RFD-1711-4

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9989	12-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	866	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	< 0.65	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.81	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.81	d	ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 2.4	d	ug/g	SA BURGESS	50914X	14-SEP-1995
EPA-6010	Chromium	< 8.1	d	ug/g	SA BURGESS	50914X	14-SEP-1
ACD-096010							
EPA-6010	Silver	< 4.9	d	ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
Q Qual:(d) Dilution required for accurate determination of all analytes; reporting limits raised accordingly.							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	> 200		degrees F	CY CRANMORE	95-12	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WM JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
Date Extracted = 12-SEP-1995
Sample Weight Extracted (g) = 1.00
Extraction Method = ACD-1310
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950912-113

Date Printed: 22-SEP-1995 15:43:04

Page 02 of 03

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-050 Project: P103 003 Customer Sample ID: RFD-1711-4

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: D02599.D
Instrument ID: HP-5989
Authorized By: C MEEHAN

Customer: APPLGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950912-113
[] : Result has been Corrected for Spike

Date Analyzed: 13-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: AK HEADRICK
QA File Number: AKH-5877

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	10000	U				
106-46-7	1,4-Dichlorobenzene	10000	U				
95-50-1	1,2-Dichlorobenzene	10000	U				
95-48-7	2-Methylphenol	10000	U				
106-44-5	4-Methylphenol	10000	2 U				
7-72-1	Hexachloroethane	10000	U				
-95-3	Nitrobenzene	10000	U				
87-68-3	Hexachlorobutadiene	10000	U				
88-06-2	2,4,6-Trichlorophenol	10000	U				
95-95-4	2,4,5-Trichlorophenol	50000	U				
121-14-2	2,4-Dinitrotoluene	10000	U				
118-74-1	Hexachlorobenzene	10000	U				
87-86-5	Pentachlorophenol	50000	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:43:04

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Analytical Services Organization 2 K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-050 Project: P103 003 Customer Sample ID: RFD-1711-4

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

AnalIS ID: 950907-050
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 1.0
% Moisture: not dec. dec.
Extraction: (Sepf/Cont/Sonc)
GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-1711-4
Customer: APPLEGATE
File ID: 002599.D
Date Received: 6-SEP-1995
Date Analyzed: 13-SEP-1995
Date Extracted: 12-SEP-1995
pH:

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC #	QC LIMITS % REC
Nitrobenzene-d5	100.0	30.22	30.2 *	35 - 114
1,1'-Biphenyl, 2-fluoro	100.0	30.72	30.7 *	43 - 116
Terphenyl-d14	100.0	41.83	41.8	33 - 141
Phenol-d6	200.0	54.53	27.3	10 - 94
2-Fluorophenol	200.0	60.55	30.3	21 - 100
2,4,6-Tribromophenol	200.0	58.11	29.1	10 - 123

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Spike Recovery: 2 out of 6 outside limits

COMMENTS:

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-059 Project: P103 ACTS Customer Sample ID: RFD-10131-4

=====

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: SOLIDS/SOIL
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 7-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	6.33E2		+/- 4.8E2	dpm/g	TL DANIELS	TAS-4934	7-SEP-1995

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-014 Project: P103 003A Customer Sample ID: RFD-10131-4

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: DEBRIS
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 15-SEP-1995
Date Sample Approved: 15-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- TCLP)	C			EN DANIEL	9512	9-SEP-1995
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Arsenic (TCLP)	<	0.10 d	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Barium (TCLP)		0.97	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Cadmium (TCLP)		0.20	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Chromium (TCLP)		0.091	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Lead (TCLP)		0.18	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Selenium (TCLP)		0.15	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
EPA-6010	Silver (TCLP)	<	0.014 d	mg/L	N MUNIZ-MORALE	50915Z	15-SEP-1995
ACD-096010							
Q Qual:(d) Dilution required for accurate determination of all analytes; reporting limits raised accordingly.							
***** Wet Instrumentation Laboratory *****							
EPA-1311	TCLP BNA Extraction	C			CA SEDLACEK	95-18	8-SEP-1995
EPA-1311	TCLP Metals Extraction	C			CA SEDLACEK	95-18	8-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury (TCLP)	<	0.001	mg/L	WW JOHNSON	50908S	12-SEP-1995

Prep (BNA- TCLP)

Analyst = EN DANIEL
pH = 5
Date Extracted = 9-SEP-1995
Sample Volume Extracted (mL) = 370
Extraction Method = ACD-1320-Separatory Funnel
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Acid Blank = 950909-014

Spike recovery Data

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnaLIS ID: 950907-014

Project: P103 003A

Customer Sample ID: RFD-10131-4

Analysis	Unspike Result	Amount Spike	Spike Result	Units	Amount Recovered	Percent Recovered
***** Inductively Coupled Plasma Laboratory *****						
ARSENIC (TCLP)	0.0679	1.00	1.02	mg/L	0.95	95.2
BARIUM (TCLP)	0.966	5.00	5.61	mg/L	4.64	92.9
CADMIUM (TCLP)	0.201	0.100	0.284	mg/L	0.083	83.0
CHROMIUM (TCLP)	0.0910	0.500	0.530	mg/L	0.439	87.8
LEAD (TCLP)	0.184	0.200	0.355	mg/L	0.171	Not Calc
SELENIUM (TCLP)	0.152	0.100	0.269	mg/L	0.117	Not Calc
SILVER (TCLP)	0.00720	0.200	0.265	mg/L	0.258	128.9

***** Mercury Laboratory *****						
MERCURY (TCLP)	0.0	20	14.34	UG/L	14.34	71.7

***** Comments from the Organic Mass Spectroscopy Laboratory *****

BNA ANALYSIS:

COMMENTS: THE SAMPLE FAILED ACCEPTANCE CRITERIA FOR FOUR (4) SURROGATE
STANDARDS. THE ASSOCIATED QC CHECK SAMPLE PASSED CRITERIA FOR ALL
SURROGATE STANDARDS. THE SAMPLE MAY BE RE-EXTRACTED AND RE-ANALYZED AT THE
OI HE PROJECT MANAGER. (AKH.09/14/95)

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-014 Project: P103 003A Customer Sample ID: RFD-10131-4

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: D02583.D
Instrument ID: HP-5989
Authorized By: C MEEHAN

Customer: APPLEGATE
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 9-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950909-014

Date Analyzed: 12-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: AK HEADRICK
QA File Number: AKH-5873

[] : Result has been Corrected for Spike

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	27	U				
106-46-7	1,4-Dichlorobenzene	27	U				
95-50-1	1,2-Dichlorobenzene	27	U				
95-48-7	2-Methylphenol	27	U				
106-44-5	4-Methylphenol	27	2 U				
67-73-1	Hexachloroethane	27	U				
	Nitrobenzene	27	U				
87-68-3	Hexachlorobutadiene	27	U				
88-06-2	2,4,6-Trichlorophenol	27	U				
95-95-4	2,4,5-Trichlorophenol	140	U				
121-14-2	2,4-Dinitrotoluene	27	U				
118-74-1	Hexachlorobenzene	27	U				
87-86-5	Pentachlorophenol	140	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-014

Project: P103 003A

Customer Sample ID: RFD-10131-4

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

AnalIS ID: 950907-014

Laboratory: Organic Mass Spectroscopy Laboratory

Sample Matrix: SOIL

Level: (low/med): LOW

Dilution Factor: 1.0

% Moisture: not dec. dec.

Extraction: (SepF/Cont/Sonc) SepF

GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-10131-4

Customer: APPLEGATE

File ID: D02583.D

Date Received: 6-SEP-1995

Date Analyzed: 12-SEP-1995

Date Extracted: 9-SEP-1995

pH: 5

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC	QC LIMITS # % REC
Nitrobenzene-d5	100.0	9.13	9.1 *	23 - 120
1,1'-Biphenyl, 2-Fluoro	100.0	73.33	73.3	30 - 115
Terphenyl-d14	100.0	110.48	110.5	18 - 137
Phenol-d6	200.0	1.26	0.6 *	24 - 113
2-Fluorophenol	200.0	5.24	2.6 *	25 - 121
2,4,6-Tribromophenol	200.0	14.55	7.3 *	19 - 122

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 4 out of 6 outside limits

COMMENTS:

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-014

Project: P103 003A

Customer Sample ID: RFD-10131-4

SOIL BNA (TCLP) MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Laboratory Name: Organic Mass SpectroscopyCustomer Name: APLEGATEAnalIS Matrix Spike ID: 950909-012

Requisition Number: _____

AnalIS Matrix Spike Duplicate ID: _____

Compound	SPIKE ADDED (ug/L)	SAMPLE CONC. (ug/L)	MS CONC. (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	540.			NC *	26 - 90
2-Chlorophenol	540.			NC *	25 - 102
1,4-Dichlorobenzene	270.	0.0	0.0	0. *	28 - 104
N-Nitroso-di-n-propylamine	270.			NC *	41 - 126
1,2,4-Trichlorobenzene	270.			NC *	38 - 107
4-Chloro-3-methylphenol	540.			NC *	26 - 103
Acenaphthene	270.			NC *	31 - 137
4-Nitrophenol	540.			NC *	11 - 114
2,4-Dinitrotoluene	270.	0.0	0.0	0. *	28 - 89
Pentachlorophenol	540.	0.0	0.0	0. *	17 - 109
Pyrene	270.			NC *	35 - 142

Compound	SPIKE ADDED (ug/L)	MSD CONC. (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Phenol	540.		NC *	NC	35	26 - 90
2-Chlorophenol	540.		NC *	NC	50	25 - 102
1,4-Dichlorobenzene	270.		NC *	NC	27	28 - 104
N-Nitroso-di-n-propylamine	270.		NC *	NC	38	41 - 126
1,2,4-Trichlorobenzene	270.		NC *	NC	23	38 - 107

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnaLIS ID: 950907-014

Project: P103 003A

Customer Sample ID: RFD-10131-4

4-Chloro-3-methylphenol	540.	NC *	NC	33	26 - 103
Acenaphthene	270.	NC *	NC	19	31 - 137
4-Nitrophenol	540.	NC *	NC	50	11 - 114
2,4-Dinitrotoluene	270.	NC *	NC	47	28 - 89
Pentachlorophenol	540.	NC *	NC	47	17 - 109
Pyrene	270.	NC *	NC	36	35 - 142

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

NC -- Not Calculated (insufficient data for calculation)

NR -- Not Reported (ONLY recoveries for spikes reported)

RPD: 0 out of 11 outside limitsSpike Recovery: 22 out of 22 outside limitsCOMMENTS: _____

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950906-004 Project: ER 9579E Customer Sample ID: RFD101314
Customer: ENV RESTORATION Requisition Number: 017879
Date Sampled: 31-AUG-1995 21:00 Date Sample Received: 5-SEP-1995
Sampled By: MB HAMEL Date Sample Completed: 19-SEP-1995

Material Description:

** No comments were made for this sample. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD553-385	Technetium	259		pCi/g	SC BARKER	13-SEP-1995	95071342
TSD553-710	% U-235	7.8	1.5	%	CD GOOD	11-SEP-1995	95071328
	Uranium	37	4.7	ppm	CD GOOD	11-SEP-1995	95071328
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
J. J. Williams (Organic Analytical Services)
J.J. Williams (TCLP Laboratory)
proved: 19-SEP-1995

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-004
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD101314
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 017879
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	200U			
75-09-2	Methylene Chloride	20U			
127-18-4	Tetrachloroethene	20U			
71-55-6	1,1,1-Trichloroethane	20U			
79-01-6	Trichloroethene	20U			

ANALYSIS DATA REPORT

AnalIS ID: 950906-004
Laboratory: TCLP Laboratory
File ID: 95170181
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: RFD101314
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 017879
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 8-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170181
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.002U			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.002U			
67-66-3	Chloroform	0.002U			
106-46-7	1,4-Dichlorobenzene	0.002			
107-06-2	1,2-Dichloroethane	0.002U			
75-35-4	1,1-Dichloroethene	0.002U			
78-93-3	2-Butanone	0.100U			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.004			
75-01-4	Vinyl Chloride	0.001U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

TCLP_VOLATILES_RPT ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-004
Laboratory: TCLP Laboratory
Sample Matrix: SOLID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: RFD101314
Customer: ENV RESTORATION
File ID: 95170181
Date Received: 5-SEP-1995
Date Analyzed: _____
Concentration Units: mg/L

Number TICs found: 7

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 67-64-1	Acetone		0.200	
2. 75-15-0	Carbon Disulfide		0.002	
3. 108-88-3	Toluene		0.002	
4. 1330-20-7	m,p-Xylene		0.002	
5. 100-42-5	Styrene		0.002	
6. 95-63-6	1,2,4-Trimethylbenzene		0.002	
7. 541-73-1	1,3-Dichlorobenzene		0.003	
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: 700-3

Waste Stream Title: Cleanup Debris

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950906-023 Project: ER 9579E Customer Sample ID: RFD48601
Customer: ENV RESTORATION Requisition Number: 017715
Date Sampled: 31-AUG-1995 12:25 Date Sample Received: 5-SEP-1995
Sampled By: MB HAMEL Date Sample Completed: 19-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD553-385	Technetium	240		pCi/g	SC BARKER	13-SEP-1995	95071341
TSD553-710	% U-235	3.0	0.55	%	CD GOOD	11-SEP-1995	95071328
	Uranium	25	3.0	ppm	CD GOOD	11-SEP-1995	95071328

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
J. J. Williams (Organic Analytical Services)
J.J. Williams (TCLP Laboratory)

Date Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-023 *****

Comments from the TCLP Laboratory *****

TCLP_Method 1311/8260 : Spike recoveries for Chlorobenzene, Chloroform, 1,4-Dichlorobenzene,

1,2-Dichloroethane, 1,1-Dichloroethene, Trichloroethene and Vinyl

chloride did not meet method criteria.

Definition Page for Qualifiers/Flags

950906-023

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
 Correlation coefficient for MSA is less than 0.995.
 The value is between the LC and the LLD.
 Having "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-023
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD48601
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 017715
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	200U			
75-09-2	Methylene Chloride	20U			
127-18-4	Tetrachloroethene	20U			
71-55-6	1,1,1-Trichloroethane	20U			
79-01-6	Trichloroethene	20U			

ANALYSIS DATA REPORT

AnalIS ID: 950906-023
Laboratory: TCLP Laboratory
File ID: 95170189
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: RFD48601
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 017715
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 11-SEP-1995
Analysis Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170189
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.020U			
56-23-5	Carbon Tetrachloride	0.020U			
108-90-7	Chlorobenzene	0.020U			
67-66-3	Chloroform	0.020U			
106-46-7	1,4-Dichlorobenzene	0.020U			
107-06-2	1,2-Dichloroethane	0.020U			
75-35-4	1,1-Dichloroethene	0.020U			
78-93-3	2-Butanone	1.00JU			
127-18-4	Tetrachloroethene	0.020U			
79-01-6	Trichloroethene	0.300			
75-01-4	Vinyl Chloride	0.010U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

TCLP_VOLATILES_RPT ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-023
Laboratory: TCLP Laboratory
Sample Matrix: SOLID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: RFD48601
Customer: ENV RESTORATION
File ID: 95170189
Date Received: 5-SEP-1995
Date Analyzed: _____
Concentration Units: mg/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	Isopropyl alcohol	6.4	0.020	J
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: 700-4

Waste Stream Title: Carbon Sludge

W
4w

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 921103-038 Project: WMGT RFD Customer Sample ID: RFD-13754
 Customer: WASTE MANAGEMENT Requisition Number:
 Date Sampled: 3-NOV-1992 Date Sample Received: 3-NOV-1992
 Sampled By: BK KELLEY Date Sample Completed: 9-DEC-1992
 Material Description: FILTERS

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3051	Arsenic	20.3 U		mg/Kg	AL SHULTZ	2-NOV-1992	92080462
	Barium	121 *		mg/Kg	AL SHULTZ	2-NOV-1992	92080462
	Cadmium	26.3		mg/Kg	AL SHULTZ	2-NOV-1992	92080462
	Chromium	210 N*J		ug/L	AL SHULTZ	2-NOV-1992	92080462
	Lead	406 NJ		ug/L	AL SHULTZ	2-NOV-1992	92080462
	Selenium	29.7 U		mg/Kg	AL SHULTZ	2-NOV-1992	92080462
	Silver	3.6 N*R		mg/Kg	AL SHULTZ	2-NOV-1992	92080462
SW846-7470	Mercury	1.78*NJ		MG/KG	EK GILBERT	12-NOV-1992	92080449
TSD515-500	Uranium (Waste)	16.7		UG/G	CJ HOLBROOK	18-NOV-1992	92102281
	Gross Alpha Activity (Soil)	38		pCi/G	JJ SISLER	11-NOV-1992	92071183
	Gross Beta Activity (Soil)	80		pCi/G	JJ SISLER	11-NOV-1992	92071183
TSD553-385	Technetium (Waste)	2.9		pCi/g	BW SHORT	18-NOV-1992	92071281

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
MERCURY	.4	0.513	128.25
URANIUM (WASTE)	50	43.	86.00

***** Comments from the Organic Analytical Services *****

Method SW 846-8240: Sample failed to meet method criteria for
 internal standard area recovery for Chlorobenzene-d5.
 The sample was replicated on 11/9/92 and exhibited the
 same characteristics.

Data Reporting Qualifiers and Flags:
Concentration Qualifiers:

B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

- J - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

- + - Correlation coefficient for MSA is less than 0.995.

- # - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

O. A. Vita (Spectrochemistry/ICP Laboratory)

D. K. Perez (Environmental and Industrial Hygiene Laboratory)

D. E. Boyd (Organic Analytical Services)

Date Approved: 9-DEC-1992

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 921103-038
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-13754
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 3-NOV-1992
Date Sampled: 3-NOV-1992

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8240
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-NOV-1992
QA File Number: 92160226
Dilution Factor: 10.0
Analyst: BD FUHR

CAS		ug/Kg	CAS		ug/Kg
67-64-1	Acetone	1000U	108-10-1	4-Methyl-2-pentanone	1000U
71-43-2	Benzene	20U	75-09-2	Methylene Chloride	20U
75-27-4	Bromodichloromethane	20U	79-34-5	1,1,2,2-Tetrachloroethane	20U
75-25-2	Bromoform	20U	127-18-4	Tetrachloroethene	20U
74-83-9	Bromomethane	40U	108-88-3	Toluene	20U
78-93-3	2-Butanone	1000U	71-55-6	1,1,1-Trichloroethane	20U
75-15-0	Carbon Disulfide	20U	79-00-5	1,1,2-Trichloroethane	20U
56-23-5	Carbon Tetrachloride	20U	79-01-6	Trichloroethene	50
108-90-7	Chlorobenzene	20U	75-69-4	Trichlorofluoromethane	40U
75-00-3	Chloroethane	40U	75-01-4	Vinyl Chloride	40U
67-66-3	Chloroform	20U	1330-20-7	Xylene (total)	20U
74-87-3	Chloromethane	40U			
124-48-1	Dibromochloromethane	20U			
	Dichlorobenzenes (Total)	20U			
75-34-3	1,1-Dichloroethane	20U			
107-06-2	1,2-Dichloroethane	20U			
75-35-4	1,1-Dichloroethene	20U			
	1,2-Dichloroethenes (cis & t)	220			
100-41-4	Ethyl benzene	20U			
76-13-1	Freon 113	20U			
	Freon 114	40U			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 700-5

Waste Stream Title: Neutralization Pit Sludge

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 950828-017 Project: ER 9579E Requisition Number: 016667
 Customer Sample ID: ESS091Z Customer: ENV RESTORATION
 Date Sampled: 24-AUG-1995 14:15 Date Sample Received: 25-AUG-1995
 Sampled By: MS ALIFF Date Sample Completed: 21-SEP-1995
 Material Description: RFD1744-1, ~~4788-4~~

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	11-SEP-1995	9080930
1311/3520	Sample Prep TCLP Semi-Volatile	COMPLETE			RK POWELL	11-SEP-1995	95160257
1311/6010A	Arsenic	0.056U		mg/L	MR KELLEY	7-SEP-1995	95170177
	Barium	0.449		mg/L	MR KELLEY	7-SEP-1995	95170177
	Cadmium	0.025J		mg/L	MR KELLEY	7-SEP-1995	95170177
	Chromium	0.014		mg/L	MR KELLEY	7-SEP-1995	95170177
	Lead	0.149		mg/L	MR KELLEY	7-SEP-1995	95170177
	Selenium	0.076U		mg/L	MR KELLEY	7-SEP-1995	95170177
1.	Mercury	0.010U		mg/L	MR KELLEY	7-SEP-1995	95170177
1-...60A	Silver	0.128		mg/L	MR KELLEY	7-SEP-1995	95170177
SW-846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	7-SEP-1995	95170177
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	7-SEP-1995	95170177
TSD553-385	Technetium	85		pCi/g	SC BARKER	13-SEP-1995	95071342
TSD553-710	% U-235	1.8	0.44	%	CD GOOD	11-SEP-1995	95071328
	Uranium	42	6.3	ppm	CD GOOD	11-SEP-1995	95071328
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 J. J. Williams (Organic Analytical Services)
 J.J. Williams (TCLP Laboratory)
 Date Approved: 21-SEP-1995

***** COMMENT PAGE *****

***** 950828-017 *****

* Comments from the TCLP Laboratory *****

TCLP_Method 1311/6010 : Cadmium is qualified as estimated due to laboratory

control sample exceeding Q. C. limits.

*** **

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - ~ Duplicate analysis is not within control limits.
 - ~ correlation coefficient for MSA is less than 0.995.
 - ~ the value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950828-017
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: ESS091Z
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 016667
Date Sample Received: 25-AUG-1995
Date Sampled: 24-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	200U			
75-09-2	Methylene Chloride	20U			
127-18-4	Tetrachloroethene	20U			
71-55-6	1,1,1-Trichloroethane	20U			
79-01-6	Trichloroethene	20U			

ANALYSIS DATA REPORT

AnalIS ID: 950828-017
Laboratory: TCLP Laboratory
File ID: 95170177
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: ESS091Z
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 016667
Date Sample Received: 25-AUG-1995
Date Sampled: 24-AUG-1995

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 7-SEP-1995
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170177
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.040U			
108-39-4	m-Cresol	0.040U			
106-44-5	4-Methylphenol	0.040U			
87-86-5	Pentachlorophenol	0.080U			
95-95-4	2,4,5-Trichlorophenol	0.040U			
88-06-2	2,4,6-Trichlorophenol	0.040U			

ANALYSIS DATA REPORT

AnalIS ID: 950828-017
Laboratory: TCLP Laboratory
File ID: 96170177
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: ESS091Z
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 016667
Date Sample Received: 25-AUG-1995
Date Sampled: 24-AUG-1995

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 7-SEP-1995
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: 95170177
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.080U			
118-74-1	Hexachlorobenzene	0.040U			
87-68-3	Hexachlorobutadiene	0.040U			
67-72-1	Hexachloroethane	0.040U			
98-95-3	Nitrobenzene	0.040U			
110-86-1	Pyridine	0.040U			

ANALYSIS DATA REPORT

AnalIS ID: 950828-017
Laboratory: TCLP Laboratory
File ID: 95170177
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: ESS091Z
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 016667
Date Sample Received: 25-AUG-1995
Date Sampled: 24-AUG-1995

TCLP Volatiles Requested on SOW Port111

Date Extracted/Prepared: 7-SEP-1995
Analysis Procedure Number: 1311/8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:-
QA File Number: 95170177
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
75-35-4	1,1-Dichloroethene	0.002U			
107-06-2	1,2-Dichloroethane	0.002U			
71-43-2	Benzene	0.002U			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.002U			
67-66-3	Chloroform	0.007			
78-93-3	2-Butanone	0.100U			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.087			
75-01-4	Vinyl Chloride	0.001U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

TCLP_VOLATILES_RPT_9579 ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950828-017
Laboratory: TCLP Laboratory
Sample Matrix: SOLID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: ESS091Z
Customer: ENV RESTORATION
File ID: 95170177
Date Received: 25-AUG-1995
Date Analyzed: _____
Concentration Units: mg/L

Number TICs found: 6

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 75-34-3	1,1-Dichloroethane	7.8	0.010	
2. 156-59-2	cis-1,2-Dichloroethene	8.7	0.002	
3. 71-55-6	1,1,1-Trichloroethane	9.1	0.400	E
4. 108-88-3	Toluene	12.8	0.003	
5. 123-91-1	1,4-Dioxane	11.4	0.005	J
6. 104-76-7	2-Ethyl-1-hexanol	19.7	0.016	J
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
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22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: 700-6

Waste Stream Title: Fuels or Oil with Water

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F NOTE: 80'C, 760 MM HG.

Melting Point. . . . NG

Freezing Point. . . . EQ 41.9 F NOTE: 5.5'C.

Pour Point. . . . NG

Softening Point. . . NG

Specific Gravity . . EQ .879 NOTE: @ 20'C.

Vapor Pressure . . . EQ 74.6 NOTE: MM HG @ 20'C.

Vapor Density. . . . EQ 2.8

Percent Volatiles. . ~ 100

Evaporation Rate . . ~ 3 NOTE: BUAC=1.

pH NG

Molecular Weight . . EQ 78.11

Viscosity. NG

Solubility in Water. @ 25C 0.18%.

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 12.2 F NOTE: -11'C, TCC.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 1043.6 F NOTE: 562'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.3

Upper (UEL). EQ 7.1

Shipping Regulations

UN/NA Number. UN1114

D.O.T. Hazard Class. . . FLAMMABLE LIQUID

Label NOT GIVEN

Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

BENZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

THE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, adache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on the materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

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Waste Stream Number: 700-7

Waste Stream Title: Caustic Solutions

700-7

- Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

Analysis ID: 930827-063 Project: WMG T RFD Requisition Number: 002720
Customer Sample ID: RFD11460 Customer: ENV./WASTE MGT.
Date Sampled: 26-AUG-1993 13:10 Date Sample Received: 27-AUG-1993
Sampled By: BK KELLEY Date Sample Completed: 29-SEP-1993
Material Description: X700 WELDING FLUX

** No comments were made for this sample. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-6010	Arsenic	2.7UN		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Barium	1.4N		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Cadmium	0.31UN		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Chromium	0.83UN		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Lead	1.9UN		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Selenium	4.1UN		MG/KG	TE SHOOK	7-SEP-1993	93080660
	Silver	9.4N		MG/KG	TE SHOOK	7-SEP-1993	93080660
SW846-7470	Mercury	<.025N		MG/KG	EK GILBERT	16-SEP-1993	93080697
TSD515-500	Uranium (Waste)	<1.0		UG/G	SK BENNINGTON	21-SEP-1993	93101062
T	Gross Alpha Activity	J 1		pCi/mL	JJ SISLER	9-SEP-1993	93071395
	Gross Beta Activity	3		pCi/mL	JJ SISLER	9-SEP-1993	93071395
TSD553-370	Technetium	<1.7		pCi/mL	JJ SISLER	31-AUG-1993	93071331

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
ARSENIC	37.74	26.5255	70.28
BARIUM	37.74	22.8698	60.60
CADMIUM	37.74	22.2925	59.07
CHROMIUM	37.74	20.7547	54.99
LEAD	37.74	23.9991	63.59
MERCURY	.146	0.054	36.99
SELENIUM	37.74	27.6528	73.27
SILVER	37.74	14.5415	38.53
URANIUM (WASTE)	9.96	8.38	84.10

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)

Approved: 29-SEP-1993

Definition Page for Qualifiers/Flags

930827-063

*** * *****

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - uplicate analysis is not within control limits.
 - relation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

Portsmouth Gaseous Diffusion Plant
Technical Operations Division
Analysis Results

AnalIS ID: 941102-059 Project: WMGT RFD Requisition Number: 011164
Customer Sample ID: RFD25112 Customer: ENV./WASTE MGT.
Date Sampled: 2-NOV-1994 10:40 Date Sample Received: 2-NOV-1994
Sampled By: TA SHERWOOD Date Sample Completed:
Material Description: H2O CLEANING SOLN X700

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
W846-6010	Arsenic	3.1U		mg/kg	TE SHOOK	3-NOV-1994	94081319
	Barium	0.08U		mg/kg	TE SHOOK	3-NOV-1994	94081319
	Cadmium	0.29U		mg/kg	TE SHOOK	3-NOV-1994	94081319
	Chromium	0.26U		mg/kg	TE SHOOK	3-NOV-1994	94081319
	Lead	1.4U		mg/kg	TE SHOOK	3-NOV-1994	94081319
	Silver	0.35U		mg/kg	TE SHOOK	3-NOV-1994	94081319
W846-7470	Mercury	.025U		mg/kg	KA DAYS	12-NOV-1994	94081336
W846-7740	Selenium	1.0U		mg/kg	EL SIMPSON	3-NOV-1994	94081319
ISE	Uranium	<1.2		ug/g	CJ HOLBROOK	3-NOV-1994	94101426
TSD553-230	Gross Alpha Activity	1		pCi/mL	JJ SISLER	17-DEC-1994	94072206
	Gross Beta Activity	1		pCi/mL	JJ SISLER	17-DEC-1994	94072206
TSD553-380	Technetium	1.4		pCi/mL	BW SHORT	13-DEC-1994	94072181
TSD553-440	% U-235	SEE COMM		% U-235	JD LITTERAL	26-NOV-1994	94072068

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	40	38.34	95.85
Barium	40	40.14	100.35
Cadmium	40	40.11	100.28
Chromium	40	40.82	102.05
Lead	40	39.44	98.60
Mercury	.148	0.143	96.62
Selenium	40	33.65	84.13
Silver	40	39.46	98.65
Uranium	100	96.3	96.29

Lab. Lab. Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)

J. J. Williams (Organic Analytical Services)

Date Approved: 19-DEC-1994

***** COMMENT PAGE *****

***** 941102-059 *****

Comments from the Radiochemistry Laboratory *****

Uranium conc. too low for assay determination.

Definition Page for Qualifiers/Flags

941102-059

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - o Duplicate analysis is not within control limits.
 - o Correlation coefficient for MSA is less than 0.995.
 - X - The value is between the LC and the LLD.
- Entering "S", "W", OR "X" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 941102-059
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890-2
Authorized By: J. J. Williams

Customer Sample ID: RFD25112
Customer: ENV./WASTE MGT.
Sample Matrix: WASTE
Requisition Number: 011164
Date Sample Received: 2-NOV-1994
Date Sampled: 2-NOV-1994

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8240A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-NOV-1994
QA File Number: 94161105A2
Dilution Factor: 2.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	200U	108-10-1	4-Methyl-2-pentanone	200U
71-43-2	Benzene	4U	75-09-2	Methylene Chloride	4U
75-27-4	Bromodichloromethane	4U	79-34-5	1,1,2,2-Tetrachloroethane	4U
75-25-2	Bromoform	4U	127-18-4	Tetrachloroethene	4U
74-83-9	Bromomethane	8U	108-88-3	Toluene	4U
78-93-3	2-Butanone	200U	71-55-6	1,1,1-Trichloroethane	4U
75-15-0	Carbon Disulfide	4U	79-00-5	1,1,2-Trichloroethane	4U
56-23-5	Carbon Tetrachloride	4U	79-01-6	Trichloroethene	4U
108-90-7	Chlorobenzene	4U	75-69-4	Trichlorofluoromethane	8U
75-00-3	Chloroethane	8U	75-01-4	Vinyl Chloride	2U
67-66-3	Chloroform	4U	1330-20-7	Xylene (total)	4U
74-87-3	Chloromethane	8U			
124-48-1	Dibromochloromethane	4U			
	Dichlorobenzenes (Total)	4U			
75-34-3	1,1-Dichloroethane	4U			
107-06-2	1,2-Dichloroethane	4U			
75-35-4	1,1-Dichloroethene	4U			
540-59-0	1,2-Dichloroethenes (cis & t)	4U			
100-41-4	Ethyl benzene	4U			
76-13-1	Freon 113	4U			
76-14-2	Freon 114	8U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 941102-059

Laboratory: Organic Analytical Services

Sample Matrix: WASTE

Level: (low/med): LOW

Dilution Factor: 2.0

Customer Sample ID: RFD25112

Customer: ENV./WASTE MGT.

File ID: _____

Date Received: 2-NOV-1994

Date Analyzed: 5-NOV-1994

Concentration Units: ug/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	1-methylether butanoic acid	15.1	10	J
2.				
3.				
4.				
5.				
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Waste Stream Number: 700-8

Waste Stream Title: Nickel Stripping Solution

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950828-012 Project: ER 9579C Customer Sample ID: ESL064
Customer: ENV RESTORATION Requisition Number: 016664
Date Sampled: 22-AUG-1995 14:45 Date Sample Received: 24-AUG-1995
Sampled By: R CAUDILL Date Sample Completed: 19-SEP-1995
Material Description: RFD21641 NI SOL.WASTE/STR.700-8

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3015	Sample Prep Metals	COMPLETE			ML STEWART	29-AUG-1995	082995-076
SW846-3520	Sample Prep Semi-Volatiles	COMPLETE			RK POWELL	28-AUG-1995	95160232
SW846-6010A	Aluminum	2110U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Arsenic	6220UJ		ug/L	TE SHOOK	29-AUG-1995	95080932
	Barium	121		ug/L	TE SHOOK	29-AUG-1995	95080932
	Beryllium	100U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Bismuth	NA			TE SHOOK	29-AUG-1995	95080932
	Cadmium	10200000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Calcium	11500J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Chromium	70800		ug/L	TE SHOOK	29-AUG-1995	95080932
	Cobalt	22000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Copper	845000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Iron	4510000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Lead	71000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Magnesium	14900J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Manganese	49900		ug/L	TE SHOOK	29-AUG-1995	95080932
	Nickel	10600000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Potassium	26300U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Selenium	8390U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Silver	211U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Sodium	17000J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Thallium	9700UJ		ug/L	TE SHOOK	29-AUG-1995	95080932
	Tin	NA			TE SHOOK	29-AUG-1995	95080932
	Titanium	2000U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Vanadium	233U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Zinc	31000		ug/L	TE SHOOK	29-AUG-1995	95080932
SW846-7470	Mercury	73.7N		ug/L	RL POLK	8-SEP-1995	95080914
SW846-9040A	pH	1.03		pH	BJ STANLEY	28-AUG-1995	95101179
TSD553-380	Technetium	99.1		pCi/ml	JP BREWSTER	8-SEP-1995	95071317
TSD553-700	% U-235	21	4.5	%	CD GOOD	11-SEP-1995	95071327
	Uranium	18	2.5	ppm	CD GOOD	11-SEP-1995	95071327

Sp recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Ba.	2222.2	2470.1	111.16
Beryllium	2222.2	2281.1	102.65
Silver	2222.2	2061.1	92.75
Vanadium	2222.2	2285.6	102.85

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 21-SEP-1995

***** COMMENT PAGE *****
***** 950828-012 *****

Comments from the Organic Analytical Services *****

-- od SW846-8270A

This sample as well as ESL-063R were noted on the chain of custodies to be waste nickel plating solutions. These samples were very acidic and the amount of base needed to adjust the pH for the base/neutral side of the extraction mandated the use of a smaller than normal sample size. This is the reason for the quantitation limits reported for this sample being higher than normally reported.

This sample failed method criteria for acid surrogate compounds in the sample, MS, & MSD extracts. The MS & MSD failed method criteria for the recovery of acid matrix spiking compounds. This is the reason all of the acid compounds in the target compound list are flagged as an estimate.

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A TL qualified as estimate due to calibration verification not meeting acceptance limits.

SW846-6010A As qualified as estimate due to interference check not meeting acceptance limits.

SW846-6010A Ca, Mg & Na qualified as estimate due to LCS not meeting acceptance limits.
(Control concentration too low for these elements).

NA = not analyzed for these elements since not on usual SW846-6010 scan.

SWE st spikes either diluted out or insufficient spike volume for sample.

Definition Page for Qualifiers/Flags

950828-012

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

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 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
 - # - Value is between the LC and the LLD.
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- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950828-012
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: ESL064
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 016664
Date Sample Received: 24-AUG-1995
Date Sampled: 22-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 31-AUG-1995
QA File Number: 95160831A3
Dilution Factor: 200
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	20000U	100-41-4	Ethyl benzene	400U
71-43-2	Benzene	400U	76-13-1	Freon 113	400U
75-27-4	Bromodichloromethane	400U	76-14-2	Freon 114	800U
75-25-2	Bromoform	400U	108-10-1	4-Methyl-2-pentanone	20000U
74-83-9	Bromomethane	800U	75-09-2	Methylene Chloride	620
78-93-3	2-Butanone	20000U	79-34-5	1,1,2,2-Tetrachloroethane	400U
75-15-0	Carbon Disulfide	400U	127-18-4	Tetrachloroethene	400U
56-23-5	Carbon Tetrachloride	400U	108-88-3	Toluene	400U
108-90-7	Chlorobenzene	400U	71-55-6	1,1,1-Trichloroethane	400U
75-00-3	Chloroethane	800U	79-00-5	1,1,2-Trichloroethane	400U
67-66-3	Chloroform	400U	79-01-6	Trichloroethene	400U
74-87-3	Chloromethane	800U	75-69-4	Trichlorofluoromethane	800U
124-48-1	Dibromochloromethane	400U	75-01-4	Vinyl Chloride	200U
106-46-7	1,4-Dichlorobenzene	400U	1330-20-7	m,p-Xylene	400U
95-50-1	1,2-Dichlorobenzene	400U	95-47-6	o-Xylene	400U
541-73-1	1,3-Dichlorobenzene	400U			
75-34-3	1,1-Dichloroethane	400U			
107-06-2	1,2-Dichloroethane	400U			
75-35-4	1,1-Dichloroethene	400U			
156-59-2	cis-1,2-Dichloroethene	400U			
156-60-5	trans-1,2-Dichloroethene	400U			

ANALYSIS DATA REPORT

Analysis ID: 950828-012
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV2
Authorized By: J. J. Williams

Customer Sample ID: ESL064
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 016664
Date Sample Received: 24-AUG-1995
Date Sampled: 22-AUG-1995

RCRA and TCLP Semi-Volatile Compounds

Date Extracted/Prepared: 28-AUG-1995
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 1-SEP-1995
QA File Number: 95160901802
Dilution Factor: 2
Analyst: BD FUHR

CAS		ug/L	CAS		ug/L
95-48-7	2-Methylphenol	400UJ			
108-39-4	m-Cresol	400UJ			
106-44-5	4-Methylphenol	400UJ			
87-86-5	Pentachlorophenol	800UJ			
95-95-4	2,4,5-Trichlorophenol	400UJ			
88-06-2	2,4,6-Trichlorophenol	400UJ			
	Total Cresol	NA			
106-46-7	1,4-Dichlorobenzene	400U			
121-14-2	2,4-Dinitrotoluene	800U			
18-74-1	Hexachlorobenzene	400U			
	Hexachloro-1,3-butadiene	400U			
67-72-1	Hexachloroethane	400U			
98-95-3	Nitrobenzene	400U			
110-86-1	Pyridine	400U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

RCRA SEMIVOLATILES ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

Analysis ID: 950828-012
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 2

Customer Sample ID: ESL064
Customer: ENV RESTORATION
File ID: _____
Date Received: 24-AUG-1995
Date Analyzed: 1-SEP-1995
Concentration Units: ug/L

Number TICs found: 4

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	Propanoic acid	3.47	1500	J
2.	unknown	4.80	1600	J
3.	unknown	5.48	1500	J
4.	unknown	7.75	2400	J
5.				
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Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 950828-011 Project: ER 9579C Customer Sample ID: ESL063
 Customer: ENV RESTORATION Requisition Number: 016663
 Date Sampled: 22-AUG-1995 14:40 Date Sample Received: 24-AUG-1995
 Sampled By: R CAUDILL Date Sample Completed: 19-SEP-1995
 Material Description: RFD21642 NI SOL.700-8 WST\STREAM

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3015	Sample Prep Metals	COMPLETE			ML STEWART	29-AUG-1995	082995-076
SW846-6010A	Aluminum	2110U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Arsenic	6220UJ		ug/L	TE SHOOK	29-AUG-1995	95080932
	Barium	2440		ug/l	TE SHOOK	29-AUG-1995	95080932
	Beryllium	2440		ug/L	TE SHOOK	29-AUG-1995	95080932
	Bismuth	NA			TE SHOOK	29-AUG-1995	95080932
	Cadmium	2560		ug/L	TE SHOOK	29-AUG-1995	95080932
	Calcium	38100J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Chromium	2440		ug/L	TE SHOOK	29-AUG-1995	95080932
	Cobalt	2110		ug/L	TE SHOOK	29-AUG-1995	95080932
	Copper	2780		ug/L	TE SHOOK	29-AUG-1995	95080932
	Iron	872000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Lead	2480U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Magnesium	631000J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Manganese	6110		ug/L	TE SHOOK	29-AUG-1995	95080932
	Nickel	2560		ug/L	TE SHOOK	29-AUG-1995	95080932
	Potassium	55000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Selenium	8390U		ug/L	TE SHOOK	29-AUG-1995	95080932
	Silver	2000		ug/L	TE SHOOK	29-AUG-1995	95080932
	Sodium	2240000J		ug/L	TE SHOOK	29-AUG-1995	95080932
	Thallium	9700UJ		ug/L	TE SHOOK	29-AUG-1995	95080932
	Tin	NA			TE SHOOK	29-AUG-1995	95080932
	Titanium	3330		ug/L	TE SHOOK	29-AUG-1995	95080932
	Vanadium	2560		ug/L	TE SHOOK	29-AUG-1995	95080932
	Zinc	14600		ug/L	TE SHOOK	29-AUG-1995	95080932
SW846-7470	Mercury	5UN		ug/L	RL POLK	8-SEP-1995	95080914
SW846-9040A	pH	0.97		pH	BJ STANLEY	28-AUG-1995	95101179
TSD553-380	Technetium	<.9		pCi/ml	JP BREWSTER	8-SEP-1995	95071317
TSD553-700	% U-235	4.9	3.6	%	CD GOOD	6-SEP-1995	95071302
	Uranium	0.033	0.012	ppm	CD GOOD	6-SEP-1995	95071302

Labor. Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)

R. E. Charles (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)

Date Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950828-011 *****

Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Tl qualified as estimate due to calibration verification not meeting acceptance limits.

SW846-6010A As qualified as estimate due to interference check not meeting acceptance limits.

SW846-6010A Ca, Mg & Na qualified as estimate due to LCS not meeting acceptance limits
(control concentrations for these elements too low).

NA = not analyzed since these elements are not on usual SW846-6010 scan.

Definition Page for Qualifiers/Flags

950828-011

Non Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - relation coefficient for MSA is less than 0.995.
 - value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950828-011
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: ESL063
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 016663
Date Sample Received: 24-AUG-1995
Date Sampled: 22-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 31-AUG-1995
QA File Number: 95160831A3
Dilution Factor: 1.0
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	260	100-41-4	Ethyl benzene	2U
71-43-2	Benzene	2U	76-13-1	Freon 113	2U
75-27-4	Bromodichloromethane	2U	76-14-2	Freon 114	4U
75-25-2	Bromoform	2U	108-10-1	4-Methyl-2-pentanone	100U
74-83-9	Bromomethane	4U	75-09-2	Methylene Chloride	2U
78-93-3	2-Butanone	100U	79-34-5	1,1,2,2-Tetrachloroethane	2U
75-15-0	Carbon Disulfide	2U	127-18-4	Tetrachloroethene	2U
56-23-5	Carbon Tetrachloride	2U	108-88-3	Toluene	2U
108-90-7	Chlorobenzene	2U	71-55-6	1,1,1-Trichloroethane	2U
75-00-3	Chloroethane	4U	79-00-5	1,1,2-Trichloroethane	2U
67-66-3	Chloroform	2U	79-01-6	Trichloroethene	2U
74-87-3	Chloromethane	4U	75-69-4	Trichlorofluoromethane	4U
124-48-1	Dibromochloromethane	2U	75-01-4	Vinyl Chloride	1U
106-46-7	1,4-Dichlorobenzene	2U	1330-20-7	m,p-Xylene	2U
95-50-1	1,2-Dichlorobenzene	2U	95-47-6	o-Xylene	2U
541-73-1	1,3-Dichlorobenzene	2U			
75-34-3	1,1-Dichloroethane	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	2U			
156-59-2	cis-1,2-Dichloroethene	2U			
156-60-5	trans-1,2-Dichloroethene	2U			

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnaLIS ID: 950828-130 Project: ER 9579C Customer Sample ID: ESL063R
 Customer: ENV RESTORATION Requisition Number: 016875
 Date Sampled: 24-AUG-1995 14:00 Date Sample Received: 25-AUG-1995
 Sampled By: MB HAMEL Date Sample Completed: 19-SEP-1995
 Material Description: X-7725 NI PLATING SOLUTION

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
-----	-----	-----	-----	-----	-----	-----	-----
SW846-3520	Sample Prep Semi-Volatiles	COMPLETE			RK POWELL	28-AUG-1995	95160232

Laboratory Manager: J. J. Williams (Organic Analytical Services)

Date Approved: 19-SEP-1995

Comments from the Organic Analytical Services *****

--Method SW846-8270A

Due to the acid content of this sample, the normal sample amount could not be used in the liquid/liquid extraction devices with the required adjusting of the pH. This resulted in the higher quantitation limits being reported.

This sample was identified on the Chain of Custody form as a nickel plating solution along with ESL-064. For this reason and the similarity of the pH of these two solutions they were grouped together as a matrix type. The MS & MSD extracts prepared from ESL-064, as well as the sample, exhibited recovery problems with all acid compounds (surrogates as well as matrix spike compounds). This sample although not spiked, did not show these problems.

This sample performed poorly with respect to the recovery of the third internal standard(Acenaphthene-d10). This was probably due to a large unknown that eluted at 17.6 minutes, shortly before the elution of this internal standard. This resulted in a retention time shift and poor chromatography. The inability to integrate this standard also led to the sample failing method criteria for a surrogate compound(2,4,6-Tribromophenol). Reinjection revealed the same problems, however chromatography was good enough to enable recovery of the internal standard and quantitation of the surrogate standard. The retention time shift was still present.

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - Value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950828-130
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: J. J. Williams

Customer Sample ID: ESL063R
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 016875
Date Sample Received: 25-AUG-1995
Date Sampled: 24-AUG-1995

RCRA and TCLP Semi-Volatile Compounds

Date Extracted/Prepared: 28-AUG-1995
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 13-SEP-1995
QA File Number: 95160913B01
Dilution Factor: 2.5
Analyst: BD FUHR

CAS		ug/L	CAS		ug/L
95-48-7	2-Methylphenol	125U			
108-39-4	m-Cresol	125U			
106-44-5	4-Methylphenol	125U			
87-86-5	Pentachlorophenol	250U			
95-95-4	2,4,5-Trichlorophenol	125U			
88-06-2	2,4,6-Trichlorophenol	125U			
	Total Cresol	NA			
106-46-7	1,4-Dichlorobenzene	125U			
121-14-2	2,4-Dinitrotoluene	250U			
18-74-1	Hexachlorobenzene	125U			
	Hexachloro-1,3-butadiene	125U			
67-72-1	Hexachloroethane	125U			
98-95-3	Nitrobenzene	125U			
110-86-1	Pyridine	125U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

RCRA SEMIVOLATILES ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950828-130
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 2.5

Customer Sample ID: ESL063R
Customer: ENV RESTORATION
File ID: _____
Date Received: 25-AUG-1995
Date Analyzed: 13-SEP-1995
Concentration Units: ug/L

Number TICs found: 10

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	Unknown	15.58	50000	J
2.	Unknown	17.64	100000	J
3.	Unknown	19.14	5000	J
4.	Unknown	19.80	15000	J
5.	Unknown	20.21	5000	J
6.	Unknown	20.53	1000	J
7.	Unknown	21.71	7000	J
8.	Unknown	23.47	1000	J
9.	Unknown	26.24	2000	J
10.	Unknown	27.06	2000	J
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: 700-9

Waste Stream Title: Solvents

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950906-065 Project: P103 ACTA Customer Sample ID: RFD-M84-3

=====

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 7-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	3.87E2		+/- 1.7E1	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Date Printed: 22-SEP-1995 15:25:22

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-039 Project: P103 003 Customer Sample ID: RFD-MB4-3

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9977	9-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.83	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	0.75	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.83	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.17		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.50		ug/g	SA BURGESS	50914X	14-SEP-1995
EPA-6010	Chromium	20		ug/g	SA BURGESS	50914X	14-SEP-
ACD-096010							
EPA-6010	Silver	< 1.00		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	< 78		degrees F	CY CRANMORE	95-11	8-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	0.19		ug/gm	WM JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
Date Extracted = 9-SEP-1995
Sample Weight Extracted (g) = 1.10
Extraction Method = ACD-1310
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 10
Associated Blank = 950911-034

Spike Recovery Data

Analysis	Unspike Result	Amount Spike	Spike Result	Units	Amount Recovered	Percent Recovered

Date Printed: 22-SEP-1995 15:25:22

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Analytical Services Organization at K-25 site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-039 Project: P103 003 Customer Sample ID: RFD-M84-3

***** Spectrochemistry Laboratory *****

ARSENIC	1.000	1.069	MG/L	1.069	106.9
LEAD	1.000	1.011	MG/L	1.011	100.6
SELENIUM	1.000	1.023	MG/L	1.023	102.3

***** Inductively Coupled Plasma Laboratory *****

BARIUM	0.000410	1.00	1.03 mg/L	1.03	103.0
CADMIUM	-0.000400	1.00	1.04 mg/L	1.04	104.0
CHROMIUM	0.120	1.00	1.19 mg/L	1.07	107.0
SILVER	-0.000100	1.00	0.248 mg/L	0.248	24.8

***** Mercury Laboratory *****

MERCURY	1.1526	2.5	3.8925	UG/L	2.7399	109.6
---------	--------	-----	--------	------	--------	-------

**** Quality Control Data from: Spectrochemistry Laboratory ****

Batch Quality Control Data Sheet

QA File(s) 50912A-C

Spiked sample AnalIS ID:950907-039

Analyte	(MS)	(MSD)	MS/MSD	LCS	LCSD	LCS/LCSD	LCS
	Spike	Dupl. Spike		Water	Dupl.		Solid
	Recovery	Recovery	%RPD	Recovery	Recovery	%RPD	Recovery
As	106.9%	106.6%	0.3%	106.7%	109.3%	2.4%	NA
Se	102.3%	101.9%	0.4%	101.2%	103.7%	2.4%	NA
Pb	100.7%	101.4%	0.7%	101.1%	104.0%	2.8%	NA

Comments:

***** Comments from the Mercury Laboratory *****

Spike duplicate recovery was 115.4%. spike blank recovery was 103.7%. Spike blank duplicate recovery was 111.0%.

***** Comments from the Inductively Coupled Plasma Laboratory *****

POOR SILVER RECOVERY IN SAMPLE SPIKE DUE TO MPA PREP METHOD.

LAM

9-14-95

***** Comments from the Organic Mass Spectroscopy Laboratory *****

QMA ANALYSIS:

NOTE: THE VALUE OF ONE (1) SURROGATE STANDARD IS OUTSIDE QC LIMITS DUE TO MATRIX EFFECT. THE QC CHECK SAMPLE HAD ALL SURROGATE STANDARDS

Date Printed: 22-SEP-1995 15:25:22

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-039 Project: P103 003 Customer Sample ID: RFD-M84-3

WITHIN QC RANGE. (CM.09/14/95)

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

MS - AnalIS (Customer) No.: 950911-036 (RFD-M84-3MS)

MSD - AnalIS (Customer) No.: 950911-037 (RFD-M84-3MSD)

Compound	Spike Added (ug/Kg)	Sample Conc. (ug/Kg)	MS Conc. (ug/Kg)	MS % REC.	QC Limits REC.
Phenol	196000	168000	300000	67.4	26- 90
2-Chlorophenol	196000	0	149000	75.8	25-102
1,4-Dichlorobenzene	98000	0	91800	93.7	28-104
N-Nitroso-di-n-prop. (1)	98000	0	105000	106.8	41-126
1,2,4-Trichlorobenzene	98000	0	99700	101.7	38-107
4-Chloro-3-methylphenol	196000	0	78600	80.2	26-103
Acenaphthene	98000	0	103000	104.8	31-137
4-Nitrophenol	196000	0	136000	69.4	11-114
2,4-Dinitrotoluene	98000	0	129000	131.8*	28- 89
Pentachlorophenol	196000	0	110000	56.0	17-109
Pyrene	98000	0	82800	84.5	35-142

Compound	SPIKE ADDED (ug/Kg)	MSD Conc. (ug/Kg)	MSD % REC.	% RPD	QC Limits RPD REC.
Phenol	196000	330000	82.6	20	26- 90
2-Chlorophenol	196000	155000	80.0	5	25-102
1,4-Dichlorobenzene	98000	104000	107.6*	14	28-104
N-Nitroso-di-n-prop. (1)	98000	70000	72.1	39#	41-126
1,2,4-Trichlorobenzene	98000	137000	141.5*	33#	38-107
4-Chloro-3-methylphenol	196000	88300	45.5	55#	26-103
Acenaphthene	98000	122000	126.0	18	31-137
4-Nitrophenol	196000	197000	102.0	38	11-114
2,4-Dinitrotoluene	98000	104000	107.0*	21	28- 89
Pentachlorophenol	196000	151000	78.0	33	17-109
Pyrene	98000	100000	103.0	20	35-172

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

Date Printed: 22-SEP-1995 15:25:22

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnaLIS ID: 950907-039 Project: P103 003 Customer Sample ID: RFD-M84-3

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >16525
Instrument ID: 5970-3
Authorized By: C MEEHANCustomer: APPLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BMA - Base/Neutral/Acid Compounds (TCCLP)

Date Extracted/Prepared: 9-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950911-034Date Analyzed: 12-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 10
Analyst: C MEEHAN
QA File Number: CM-5871

□ : Result has been Corrected for Spike

CAS	Analysis	ug/kg	Q Qual	CAS	Analysis	ug/kg	Q Qual
110-86-1	Pyridine	91000	U				
106-46-7	1,4-Dichlorobenzene	91000	U				
95-50-1	1,2-Dichlorobenzene	91000	U				
95-48-7	2-Methylphenol	91000	U				
106-44-5	4-Methylphenol	91000	2 U				
7-72-1	Hexachloroethane	91000	U				
-95-3	Nitrobenzene	91000	U				
87-68-3	Hexachlorobutadiene	91000	U				
88-06-2	2,4,6-Trichlorophenol	91000	U				
95-95-4	2,4,5-Trichlorophenol	450000	U				
121-14-2	2,4-Dinitrotoluene	91000	U				
118-74-1	Hexachlorobenzene	91000	U				
87-86-5	Pentachlorophenol	450000	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(Z) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:25:22

Page 05 of 05

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analysis Results

AnalIS ID: 950907-039 Project: P103 003 Customer Sample ID: RFD-M84-3

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

AnalIS ID: 950907-039
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 10
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc)
GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-M84-3
Customer: APPLGATE
File ID: >16525
Date Received: 6-SEP-1995
Date Analyzed: 12-SEP-1995
Date Extracted: 9-SEP-1995
pH:

Surrogate Compound	SPIKE ADDED (ug/kg)	RESULT (ug/kg)	% REC		QC LIMITS % REC
			REC	#	
Nitrobenzene-d5	100.0	675.15	675.2	*	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	89.26	89.3		43 - 116
Terphenyl-d14	100.0	115.66	115.7		33 - 161
Phenol-d6	200.0	209.23	104.6	*	10 - 94
2-Fluorophenol	200.0	195.46	97.7		21 - 100
2,4,6-Tribromophenol	200.0	189.24	94.6		10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 2 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-015 Project: ER 9579C Customer Sample ID: RFD843

Customer: ENV RESTORATION Requisition Number: 017719

Date Sampled: 31-AUG-1995 14:40 Date Sample Received: 5-SEP-1995

Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	6.19		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	3.7		pCi/ml	JP BREWSTER	13-SEP-1995	95071343
TSD553-700	% U-235	1.3	0.48	%	CD GOOD	11-SEP-1995	95071327
	Uranium	45	11	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)

R. E. Charles (Environmental and Industrial Hygiene Laboratory)

J. J. Williams (Organic Analytical Services)

Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-015 *****

Comments from the Organic Analytical Services *****

SW846-8260

Results are reported in ug/mL (PPM).

A broad band of coeluting peaks was present on the GC chromatogram at a retention time range of 19 min to 26 min. These peaks showed poor separation and identification.

Due to carryover from previous sample which contained percentage amounts of Freon-113, the value reported for Freon-113 is an estimate value. The 300ppb of Freon-113 may be due to carryover. Due to the percentage amounts of 1,1,1-Trichloroethane in the sample matrix, the sample was unable to be reanalyzed for Freon-113 confirmation.

Due to the percentage amounts of 1,1,1-Trichloroethane in the sample the peak had a poor shape. The actual amounts of 1,1,1-Trichloroethane in the sample may be much higher.

Definition Page for Qualifiers/Flags

950906-015

*** **~ *****

I. Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 correlation coefficient for MSA is less than 0.995.
 the value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-015
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD843
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017719
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 13-SEP-1995
QA File Number: 95160913A3
Dilution Factor: 20
Analyst: MA NOVOTNY

CAS		ug/mL	CAS		ug/mL
67-64-1	Acetone	11000	100-41-4	Ethyl benzene	41
71-43-2	Benzene	40U	76-13-1	Freon 113	300J
75-27-4	Bromodichloromethane	40U	76-14-2	Freon 114	80U
75-25-2	Bromoform	40U	108-10-1	4-Methyl-2-pentanone	2000U
74-83-9	Bromomethane	80U	75-09-2	Methylene Chloride	40U
78-93-3	2-Butanone	3500B	79-34-5	1,1,2,2-Tetrachloroethane	40U
75-15-0	Carbon Disulfide	40U	127-18-4	Tetrachloroethene	100
56-23-5	Carbon Tetrachloride	40U	108-88-3	Toluene	2800U
108-90-7	Chlorobenzene	40U	71-55-6	1,1,1-Trichloroethane	39000E
75-00-3	Chloroethane	80U	79-00-5	1,1,2-Trichloroethane	170
67-66-3	Chloroform	40U	79-01-6	Trichloroethene	790
74-87-3	Chloromethane	80U	75-69-4	Trichlorofluoromethane	80U
124-48-1	Dibromochloromethane	40U	75-01-4	Vinyl Chloride	20U
106-46-7	1,4-Dichlorobenzene	40U	1330-20-7	m,p-Xylene	140
95-50-1	1,2-Dichlorobenzene	40U	95-47-6	o-Xylene	82
541-73-1	1,3-Dichlorobenzene	40U			
75-34-3	1,1-Dichloroethane	110			
107-06-2	1,2-Dichloroethane	360			
75-35-4	1,1-Dichloroethene	40U			
156-59-2	cis-1,2-Dichloroethene	40U			
156-60-5	trans-1,2-Dichloroethene	40U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-015
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 20

Customer Sample ID: RFD843
Customer: ENV RESTORATION
File ID: _____
Date Received: 5-SEP-1995
Date Analyzed: 13-SEP-1995
Concentration Units: ug/mL

Number TICs found: 7

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	undecane	21.9	3000	J
2.	dodecane	24.0	4000	J
3.	tridecane	26.0	2000	J
4.	1,2,3,4tetrahydro6methylnaphth	27.6	600	J
5.	tetradecane	27.8	2000	J
6. 91-57-6	2-Methylnaphthalene	28.8	700	J
7. 95-63-6	1,2,4-Trimethylbenzene		440	
8.				
9.				
10.				
11.				
12.				
13.				
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24.				
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27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 950906-015
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFDM843
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017719
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	10000U			
75-09-2	Methylene Chloride	1000U			
127-18-4	Tetrachloroethene	2600			
71-55-6	1,1,1-Trichloroethane	400000			
79-01-6	Trichloroethene	930			

Analytical Services Organization @ K-25 Site

Oak Ridge, TN 37831

Sample Analyses Results

AnaLIS ID: 950906-062

Project: P103 ACTA

Customer Sample ID: RFD-560-2

=====

Customer: APPLEGATE	Requisition Number:
Date Sampled: 31-AUG-1995	Date Sample Received: 6-SEP-1995
Sampled By: JD/WF	Date Sample Completed: 6-SEP-1995
Material Description: AQUEOUS WASTE	Date Sample Approved: 12-SEP-1995
Program Manager: MH BARTLING (# 29893)	[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	-2.62E0		+/- 5.5E0	dpm/ml	TL DANIELS	TAS-4935	6-SEP-1995

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-052 Project: P103 003 Customer Sample ID: RFD-560-2

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved:
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
	Prep (BNA- Option)				JR HUSKEY	9977	9-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.82	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	< 0.66	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.82	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.17		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.50		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Chromium	< 1.7		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Silver	< 0.99		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	< 78		degrees F	CY CRANMORE	95-12	8-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WW JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
Date Extracted = 9-SEP-1995
Sample Weight Extracted (g) = 1.55
Extraction Method = ACD-1310
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 10
Associated Blank = 950911-034

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-052 Project: P103 003 Customer Sample ID: RFD-560-2

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >16530
Instrument ID: 5970-3
Authorized By: C MEEHAN

Customer: APPLGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 9-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950911-034

Date Analyzed: 12-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 10
Analyst: C MEEHAN
QA File Number: CM-5871

☐ : Result has been Corrected for Spike

CAS	Analysis	ug/kg	Q Qual	CAS	Analysis	ug/kg	Q Qual
110-86-1	Pyridine	65000	U				
106-46-7	1,4-Dichlorobenzene	65000	U				
95-50-1	1,2-Dichlorobenzene	65000	U				
95-48-7	2-Methylphenol	65000	U				
106-44-5	4-Methylphenol	65000	2 U				
67-72-1	Hexachloroethane	65000	U				
5-3	Nitrobenzene	65000	U				
28-3	Hexachlorobutadiene	65000	U				
88-06-2	2,4,6-Trichlorophenol	65000	U				
95-95-4	2,4,5-Trichlorophenol	320000	U				
121-14-2	2,4-Dinitrotoluene	65000	U				
118-74-1	Hexachlorobenzene	65000	U				
87-86-5	Pentachlorophenol	320000	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:43:47

Page 03 of 03

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-052 Project: P103 003 Customer Sample ID: RFD-560-2

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

AnalIS ID: 950907-052
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 10
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc)
GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-560-2
Customer: APPLEGATE
File ID: >16530
Date Received: 6-SEP-1995
Date Analyzed: 12-SEP-1995
Date Extracted: 9-SEP-1995
pH:

Surrogate Compound	SPIKE ADDED (ug/kg)	RESULT (ug/kg)	% REC	#	QC LIMITS % REC
Nitrobenzene-d5	100.0	101.35	101.3		35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	107.11	107.1		43 - 116
Terphenyl-d14	100.0	96.50	96.5		33 - 141
Phenol-d6	200.0	236.91	118.5	*	10 - 94
2-Fluorophenol	200.0	193.32	96.7		21 - 100
2,4,6-Tribromophenol	200.0	195.97	98.0		10 - 123

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Spike Recovery: 1 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-006 Project: ER 9579C Customer Sample ID: RFD5602
 Customer: ENV RESTORATION Requisition Number: 017877
 Date Sampled: 31-AUG-1995 20:30 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	3.01		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	<0.9		pCi/ml	JP BREWSTER	13-SEP-1995	95071340
TSD553-700	% U-235	11	9.7	%	CD GOOD	11-SEP-1995	95071327
	Uranium	0.025	0.012	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)
 Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-006 *****

Comments from the Organic Analytical Services *****

SW846-8260

Results are reported in ug/mL (PPM)

Due to sample matrix, sample was unable to be analyzed at
a lesser dilution.

F001 Analysis

Sample consisted of two layers: Top Layer 80%

Bottom Layer 20%

Top Layer results were reported in the results section of this report.

Bottom Layer

Methylene Chloride	<1000ug/g
Tetrachloroethene	<1000ug/g
Carbon Tetrachloride	<10000ug/g
Trichloroethene	<1000ug/g
1,1,1-trichloroethane	<1000ug/g

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - correlation coefficient for MSA is less than 0.995.
 - value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-006
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD5602
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017877
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 95160914A3
Dilution Factor: 100
Analyst: MA NOVOTNY

CAS		ug/mL	CAS		ug/mL
67-64-1	Acetone	10000U	100-41-4	Ethyl benzene	200U
71-43-2	Benzene	200U	76-13-1	Freon 113	200U
75-27-4	Bromodichloromethane	200U	76-14-2	Freon 114	400U
75-25-2	Bromoform	200U	108-10-1	4-Methyl-2-pentanone	10000U
74-83-9	Bromomethane	400U	75-09-2	Methylene Chloride	200U
78-93-3	2-Butanone	10000B	79-34-5	1,1,2,2-Tetrachloroethane	200U
75-15-0	Carbon Disulfide	200U	127-18-4	Tetrachloroethene	200U
56-23-5	Carbon Tetrachloride	200U	108-88-3	Toluene	200U
108-90-7	Chlorobenzene	200U	71-55-6	1,1,1-Trichloroethane	200U
75-00-3	Chloroethane	400U	79-00-5	1,1,2-Trichloroethane	200U
67-66-3	Chloroform	200U	79-01-6	Trichloroethene	200U
74-87-3	Chloromethane	400U	75-69-4	Trichlorofluoromethane	400U
124-48-1	Dibromochloromethane	200U	75-01-4	Vinyl Chloride	100U
106-46-7	1,4-Dichlorobenzene	200U	1330-20-7	m,p-Xylene	200U
95-50-1	1,2-Dichlorobenzene	200U	95-47-6	o-Xylene	200U
541-73-1	1,3-Dichlorobenzene	200U			
75-34-3	1,1-Dichloroethane	200U			
107-06-2	1,2-Dichloroethane	200U			
75-35-4	1,1-Dichloroethene	200U			
156-59-2	cis-1,2-Dichloroethene	200U			
156-60-5	trans-1,2-Dichloroethene	200U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-006

Laboratory: Organic Analytical Services

Sample Matrix: LIQUID WASTE

Level: (low/med): LOW

Dilution Factor: 100

Customer Sample ID: RFD5602

Customer: ENV RESTORATION

File ID: _____

Date Received: 5-SEP-1995

Date Analyzed: 14-SEP-1995

Concentration Units: ug/mL

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 123-54-6	2,4-Pentanedione	15.7	3000	J
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 950906-006
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD5602
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017877
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	NA			
127-18-4	Tetrachloroethene	11000			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-070 Project: P103 ACTA Customer Sample ID: RFD-2166-1

=====

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 7-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	3.59E1		+/- 7.3E0	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Date Printed: 22-SEP-1995 15:29:54

Page 01 of 04

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-044 Project: P103 D03 Customer Sample ID: RFD-2166-1

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved:
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
	Prep (BNA- Option)	-----			JR HUSKEY	9977	9-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.80	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	0.77	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.80	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	0.75		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.48		ug/g	SA BURGESS	50914X	14-SEP-1995
010							
E J	Chromium	1.7		ug/g	SA BURGESS	50914X	14-SEP-1
ACD-096010							
EPA-6010	Silver	< 0.96		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	80		degrees F	CY CRANMORE	95-13	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WW JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
Date Extracted = 9-SEP-1995
Sample Weight Extracted (g) = 1.10
Extraction Method = ACD-1310
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 10
Associated Blank = 950911-034

***** Comments from the Wet Instrumentation Laboratory *****

1. SAMPLE PRODUCED FLAMMABLE FUMES AT 80 DEGREES AND BOILED AT 89 DEGREES FAHRENHEIT. 9-14-95 CC

Date Printed: 22-SEP-1995 15:29:54

Page 02 of 04

Analytical Services Organization at K-25 Site

Oak Ridge, TN 37831

Sample Analyzes Results

AnalIS ID: 950907-044

Project: P103 003

Customer Sample ID: RFD-2166-1

***** Comments from the Organic Mass Spectroscopy Laboratory *****

BNA ANALYSIS:

COMMENTS: VALUES OF TWO (2) SURROGATE STANDARDS WERE OUTSIDE QC LIMITS
DUE TO DILUTION AND MATRIX EFFECT, THE QC CHECK SAMPLE HAD ALL SURROGATE
STANDARDS WITHIN QC RANGE. (CM.09/14/95)

Date Printed: 22-SEP-1995 15:29:54

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-044 Project: P103 003 Customer Sample ID: RFD-2166-1

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >16528
Instrument ID: 5970-3
Authorized By: C MEEHAN

Customer: APPLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 9-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950911-034

Date Analyzed: 12-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 10
Analyst: C MEEHAN
QA File Number: CN-5871

[] : Result has been Corrected for Spike

CAS	Analysis	ug/kg	Q Qual	CAS	Analysis	ug/kg	Q Qual
110-86-1	Pyridine	91000	U				
106-46-7	1,4-Dichlorobenzene	91000	U				
95-50-1	1,2-Dichlorobenzene	91000	U				
95-48-7	2-Methylphenol	91000	U				
106-44-5	4-Methylphenol	91000	2 U				
47-72-1	Hexachloroethane	91000	U				
95-3	Nitrobenzene	91000	U				
68-3	Hexachlorobutadiene	91000	U				
88-06-2	2,4,6-Trichlorophenol	91000	U				
95-95-4	2,4,5-Trichlorophenol	450000	U				
121-14-2	2,4-Dinitrotoluene	91000	U				
118-74-1	Hexachlorobenzene	91000	U				
87-86-5	Pentachlorophenol	450000	U				

Q Qual: (U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:29:54

Page 04 of 04

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-044 Project: P103 003 Customer Sample ID: RFD-2166-1

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERYANALIS ID: 950907-044
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 10
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc) ---
GPC Cleanup: (Y/N) NCustomer Sample ID: RFD-2166-1Customer: APPLEGATEFile ID: >16528Date Received: 6-SEP-1995Date Analyzed: 12-SEP-1995Date Extracted: 9-SEP-1995pH: ---

Surrogate Compound	SPIKE ADDED (ug/kg)	RESULT (ug/kg)	% REC	QC LIMITS # % REC
Nitrobenzene-d5	100.0	90.83	90.8	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	106.49	106.5	43 - 116
Terphenyl-d14	100.0	167.21	167.2 *	33 - 141
Phenol-d6	200.0	239.66	119.8 *	10 - 94
2-Fluorophenol	200.0	212.06	106.0 *	21 - 100
2,4,6-Tribromophenol	200.0	212.45	106.2	10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 3 out of 6 outside limitsCOMMENTS: -----

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950906-010 Project: ER 9579C Customer Sample ID: RFD21661
Customer: ENV RESTORATION Requisition Number: 017893
Date Sampled: 31-AUG-1995 20:15 Date Sample Received: 5-SEP-1995
Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TSD553-380	Technetium	1.6		pCi/ml	JP BREWSTER	13-SEP-1995	95071340
TSD553-700	% U-235	0.73	0.29	%	CD GOOD	11-SEP-1995	95071327
	Uranium	27	6.6	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
J. J. Williams (Organic Analytical Services)
Date Approved: 19-SEP-1995

***** COMMENT PAGE *****
***** 950906-010 *****

Comments from the Organic Analytical Services *****

SW-260

Results are reported in ug/mL (PPM)

Definition Page for Qualifiers/Flags

950906-010

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
Correlation coefficient for MSA is less than 0.995.
 - # - Value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-010
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD21661
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017893
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 13-SEP-1995
QA File Number: 95160913A3
Dilution Factor: 20
Analyst: MA NOVOTNY

CAS		ug/mL	CAS		ug/mL
67-64-1	Acetone	15000	100-41-4	Ethyl benzene	40U
71-43-2	Benzene	40U	76-13-1	Freon 113	65000E
75-27-4	Bromodichloromethane	40U	76-14-2	Freon 114	80U
75-25-2	Bromoform	40U	108-10-1	4-Methyl-2-pentanone	2000U
74-83-9	Bromomethane	80U	75-09-2	Methylene Chloride	40U
78-93-3	2-Butanone	2000U	79-34-5	1,1,2,2-Tetrachloroethane	40U
75-15-0	Carbon Disulfide	40U	127-18-4	Tetrachloroethene	40U
56-23-5	Carbon Tetrachloride	40U	108-88-3	Toluene	40U
108-90-7	Chlorobenzene	40U	71-55-6	1,1,1-Trichloroethane	40U
75-00-3	Chloroethane	80U	79-00-5	1,1,2-Trichloroethane	40U
67-66-3	Chloroform	40U	79-01-6	Trichloroethene	40U
74-87-3	Chloromethane	80U	75-69-4	Trichlorofluoromethane	80U
124-48-1	Dibromochloromethane	40U	75-01-4	Vinyl Chloride	20U
106-46-7	1,4-Dichlorobenzene	40U	1330-20-7	m,p-Xylene	40U
95-50-1	1,2-Dichlorobenzene	40U	95-47-6	o-Xylene	40U
541-73-1	1,3-Dichlorobenzene	40U			
75-34-3	1,1-Dichloroethane	40U			
107-06-2	1,2-Dichloroethane	40U			
75-35-4	1,1-Dichloroethene	40U			
156-59-2	cis-1,2-Dichloroethene	40U			
156-60-5	trans-1,2-Dichloroethene	40U			

ANALYSIS DATA REPORT

AnalIS ID: 950906-010
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD21661
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017893
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnaLIS ID: 950906-066

Project: P103 ACTA

Customer Sample ID: RFD-1712-1

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 7-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	6.74E-1		+/- 3.7E0	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Analytical Services Organization @ K-25 Site

Oak Ridge, TN 37831

Sample Analyses Results

Analysis ID: 950907-040

Project: P103 003

Customer Sample ID: RFD-1712-1

Customer: APPLEGATE
 Date Sampled: 31-AUG-1995
 Sampled By: JD/WF
 Material Description: WASTE
 Program Manager: MH BARTLING (# 29893)

Requisition Number:
 Date Sample Received: 6-SEP-1995
 Date Sample Completed: 22-SEP-1995
 Date Sample Approved:
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
	Prep (BNA- Option)	-----			JR HUSKEY	9977	9-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.81	R	ug/g	CB HANNONDS	50912A	13-SEP-1995
EPA-7421	Lead	< 0.64	R	ug/g	CB HANNONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.81	R	ug/g	CB HANNONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.16		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.48		ug/g	SA BURGESS	50914X	14-SEP-1995
1010							
EPA-6010	Chromium	< 1.6		ug/g	SA BURGESS	50914X	14-SEP-1
ACD-096010							
EPA-6010	Silver	1.0		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	< 78		degrees F	CY CRANMORE	95-11	8-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WM JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

 Analyst = JR HUSKEY
 Date Extracted = 9-SEP-1995
 Sample Weight Extracted (g) = 1.02
 Extraction Method = ACD-1310
 Extraction Solvent = Methylene Chloride
 Extraction Cleanup = Sodium Sulfate
 Final Volume of Extract (mL) = 10
 Associated Blank = 950911-034

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-040

Project: P103 003

Customer Sample ID: RFD-1712-1

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >16526
Instrument ID: 5970-3
Authorized By: C MEEHAN

Customer: APPLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 9-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950911-034

Date Analyzed: 12-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: .1
Analyst: C MEEHAN
QA File Number: CH-5871

[] : Result has been Corrected for Spike

CAS	Analysis	ug/kg	Q Qual	CAS	Analysis	ug/kg	Q Qual
110-86-1	Pyridine	98000	U				
106-46-7	1,4-Dichlorobenzene	98000	U				
95-50-1	1,2-Dichlorobenzene	98000	U				
95-48-7	2-Methylphenol	98000	U				
106-44-5	4-Methylphenol	98000	2 U				
67-72-1	Hexachloroethane	98000	U				
95-3	Nitrobenzene	98000	U				
68-3	Hexachlorobutadiene	98000	U				
88-06-2	2,4,6-Trichlorophenol	98000	U				
95-95-4	2,4,5-Trichlorophenol	490000	U				
121-14-2	2,4-Dinitrotoluene	98000	U				
118-74-1	Hexachlorobenzene	98000	U				
87-86-5	Pentachlorophenol	490000	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:28:40

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-040 Project: P103 003 Customer Sample ID: RFD-1712-1

BNA (TCCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

Analysis ID: 950907-040
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: .1
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc)
GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-1712-1
Customer: APPLGATE
File ID: >16526
Date Received: 6-SEP-1995
Date Analyzed: 12-SEP-1995
Date Extracted: 9-SEP-1995
pH:

Surrogate Compound	SPIKE ADDED (ug/kg)	RESULT (ug/kg)	% REC	#	QC LIMITS % REC
Nitrobenzene-d5	100.0	95.04	95.0		35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	106.32	106.3		43 - 116
Terphenyl-d14	100.0	103.78	103.8		33 - 141
Phenol-d6	200.0	244.16	122.1	*	10 - 94
2-Fluorophenol	200.0	214.68	107.3	*	21 - 100
2,4,6-Tribromophenol	200.0	196.42	98.2		10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 2 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-007 Project: ER 9579C Customer Sample ID: RFD17121
 Customer: ENV RESTORATION Requisition Number: 017892
 Date Sampled: 31-AUG-1995 12:20 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	8.85		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	<0.9		pCi/ml	JP BREWSTER	13-SEP-1995	95071340
TSD553-700	% U-235	NA	NA	%	CD GOOD	11-SEP-1995	95071327
	Uranium	<0.01	NA	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)
 Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-007 *****

Comments from the Organic Analytical Services *****

SW846-8260

Results are reported in ug/mL (PPM)

Due to percentage amounts in matrix, 1,1,1-Trichloroethane had poor peak shape. Actual amount of 1,1,1-Trichloroethane in sample may be much higher than value reported.

Definition Page for Qualifiers/Flags

950906-007

ic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-007
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD17121
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017892
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 95160914A3
Dilution Factor: 100
Analyst: MA NOVOTNY

CAS		ug/mL	CAS		ug/mL
67-64-1	Acetone	10000U	100-41-4	Ethyl benzene	200U
71-43-2	Benzene	200U	76-13-1	Freon 113	200U
75-27-4	Bromodichloromethane	200U	76-14-2	Freon 114	400U
75-25-2	Bromoform	200U	108-10-1	4-Methyl-2-pentanone	10000U
74-83-9	Bromomethane	400U	75-09-2	Methylene Chloride	200U
78-93-3	2-Butanone	10000U	79-34-5	1,1,2,2-Tetrachloroethane	200U
75-15-0	Carbon Disulfide	200U	127-18-4	Tetrachloroethene	200U
56-23-5	Carbon Tetrachloride	200U	108-88-3	Toluene	200U
108-90-7	Chlorobenzene	200U	71-55-6	1,1,1-Trichloroethane	220000E
75-00-3	Chloroethane	400U	79-00-5	1,1,2-Trichloroethane	200U
67-66-3	Chloroform	200U	79-01-6	Trichloroethene	370
74-87-3	Chloromethane	400U	75-69-4	Trichlorofluoromethane	400U
124-48-1	Dibromochloromethane	200U	75-01-4	Vinyl Chloride	100U
106-46-7	1,4-Dichlorobenzene	200U	1330-20-7	m,p-Xylene	200U
95-50-1	1,2-Dichlorobenzene	200U	95-47-6	o-Xylene	200U
541-73-1	1,3-Dichlorobenzene	200U			
75-34-3	1,1-Dichloroethane	200U			
107-06-2	1,2-Dichloroethane	460			
75-35-4	1,1-Dichloroethene	200U			
156-59-2	cis-1,2-Dichloroethene	200U			
156-60-5	trans-1,2-Dichloroethene	200U			

ANALYSIS DATA REPORT

AnalIS ID: 950906-007
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD17121
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017892
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	10000U			
75-09-2	Methylene Chloride	1000U			
127-18-4	Tetrachloroethene	1000U			
71-55-6	1,1,1-Trichloroethane	1000000			
79-01-6	Trichloroethene	440J			

Waste Stream Number: 700-10

Waste Stream Title: Oil

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F NOTE: 80'C, 760 MM HG.

Melting Point. . . . NG

Freezing Point. . . . EQ 41.9 F NOTE: 5.5'C.

Pour Point. . . . NG

Softening Point. . . . NG

Specific Gravity . . EQ .879 NOTE: @ 20'C.

Vapor Pressure . . . EQ 74.6 NOTE: MM HG @ 20'C.

Vapor Density. . . . EQ 2.8

Percent Volatiles. . ~ 100

Evaporation Rate . . ~ 3 NOTE: BUAC=1.

pH NG

Molecular Weight . . EQ 78.11

Viscosity. NG

Solubility in Water. @ 25C 0.18%.

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 12.2 F NOTE: -11'C, TCC.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 1043.6 F NOTE: 562'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.3

Upper (UEL). EQ 7.1

Shipping Regulations

UN/NA Number. . . . UN1114

D.O.T. Hazard Class. . . FLAMMABLE LIQUID

Label NOT GIVEN

Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

BENZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

USUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

AMERICAN BURDICK & JACKSON'S DISCLAIMER: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. American Burdick & Jackson makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. American Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

Waste Stream Number: 700-11

Waste Stream Title: HEPA Filters

TECHNETIUM

Client: GeoCon, Inc.

Client Reference No.: X231B

LSDG: 32344

Date Received: 7/12/94

Method: RL-2317

Lab Sample ID	Client Sample ID	Date Analyzed	Analyte	Matrix	Units	Result	2 Sigma Error	Detection Limit	Qualifier
3234401	22341	9/1/94	Tc - 99	NSS	nCi/kg	ND	NA	1.48E+00	
3234403	24009	9/1/94	Tc - 99	NSS	nCi/kg	3.18E+01	1.40E+00	1.69E+00	
3234404	22342	9/2/94	Tc - 99	NSS	nCi/kg	1.88E+00	8.56E-01	1.38E+00	
3234405	24010	9/2/94	Tc - 99	Soil	nCi/kg	6.88E+01	2.99E+00	2.88E+00	

ND = Not Detected Above MDA

NA = Not Applicable

GROSS ALPHA / BETA

Client: GeoCon, Inc.

Client Reference No.: X231B

LSDG: 32344

Date Received: 7/12/94

Method: RL-2302

Lab Sample ID	Client Sample ID	Date Analyzed	Analyte	Matrix	Units	Result	2 Sigma Error	Detection Limit	Qualifier
3234401	22341	8/30/94	Gross Alpha	NSS	nCi/kg	9.13E-01	5.41E-01	7.83E-01	
3223403	24009	8/30/94	Gross Alpha	NSS	nCi/kg	1.17E+01	2.19E+00	1.51E+00	
3223404	22342	8/30/94	Gross Alpha	NSS	nCi/kg	1.13E+00	4.55E-01	5.81E-01	
3234405	24010	9/7/94	Gross Alpha	Soil	nCi/kg	3.06E+01	4.28E+00	3.31E+00	
3234401	22341	8/30/94	Gross Beta	NSS	nCi/kg	2.49E+00	7.05E-01	1.06E+00	
3223403	24009	8/30/94	Gross Beta	NSS	nCi/kg	1.51E+01	2.02E+00	1.98E+00	
3223404	22342	8/30/94	Gross Beta	NSS	nCi/kg	1.13E+00	4.19E-01	6.86E-01	
405	24010	9/7/94	Gross Beta	Soil	nCi/kg	5.90E+01	4.74E+00	5.31E+00	

NL = Not Detected Above MDA

NA = Not Applicable

GROSS ALPHA / BETA

Client: GeoCon, Inc.

Client Reference No.: X231B

LSDG: 32344

Date Received: 7/12/94

Method: RL-2302

Lab Sample ID	Client Sample ID	Date Analyzed	Analyte	Matrix	Units	Result	2 Sigma Error	Detection Limit	Qualifier
3234401	22341	8/30/94	Gross Alpha	NSS	nCi/kg	9.13E-01	5.41E-01	7.83E-01	
3223403	24009	8/30/94	Gross Alpha	NSS	nCi/kg	1.17E+01	2.19E+00	1.51E+00	
3223404	22342	8/30/94	Gross Alpha	NSS	nCi/kg	1.13E+00	4.55E-01	5.81E-01	
3234405	24010	9/7/94	Gross Alpha	Soil	nCi/kg	3.06E+01	4.28E+00	3.31E+00	
3234401	22341	8/30/94	Gross Beta	NSS	nCi/kg	2.49E+00	7.05E-01	1.06E+00	
3223403	24009	8/30/94	Gross Beta	NSS	nCi/kg	1.51E+01	2.02E+00	1.98E+00	
3223404	22342	8/30/94	Gross Beta	NSS	nCi/kg	1.13E+00	4.19E-01	6.86E-01	
405	24010	9/7/94	Gross Beta	Soil	nCi/kg	5.90E+01	4.74E+00	5.31E+00	

L - Not Detected Above MDA

NA = Not Applicable

NATURAL URANIUM

Client: GeoCon, Inc.

Client Reference No.: X231B

LSDG: 32344

Date Received: 7/12/94

Method: RL-2323

Lab Sample ID	Client Sample ID	Date Analyzed	Analyte	Matrix	Units	Result	2 Sigma Error	Detection Limit	Qualifier
3234401	22341	9/1/94	U-NAT	NSS	ug/g	8.39E-01	2.81E-02	6.29E-03	
3234403	24009	9/1/94	U-NAT	NSS	ug/g	7.13E+00	2.73E-01	5.13E-02	
3234404	22342	9/1/94	U-NAT	NSS	ug/g	1.14E+00	3.99E-02	4.24E-03	
3234405	24010	9/1/94	U-NAT	NSS	ug/g	1.63E+01	5.27E-01	9.62E-03	

ND = Not Detected Above MDA

NA = Not Applicable

General Chemistry Ignitability

Client: GeoCon, Inc.

LSDG: 32344

Client Reference No.: X231B

Date Received: 7/12/94

Method: 261.21

<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Date Analyzed</i>	<i>Matrix</i>	<i>Units</i>	<i>Flashpoint Result</i>	<i>Detection Limit</i>	<i>Flag</i>
3234401	22341	7/17/94	NSS	NA	Positive	NA	
3234402	22349	7/17/94	NSS	NA	Negative	NA	
3234403	24009	7/17/94	NSS	NA	Positive	NA	
3234404	22342	7/17/94	NSS	NA	Negative	NA	
3234405	24010	7/17/94	NSS	NA	Negative	NA	

BQL = Below Quantitation Limit

General Chemistry Corrosivity by pH

Client: GeoCon, Inc.

LSDG: 32344

Client Reference No.: X231B

Date Received: 7/12/94

Method: 9045

<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Matrix</i>	<i>Date Analyzed</i>	<i>Units</i>	<i>Final Result</i>	<i>Detection Limit</i>	<i>Flag</i>
3234401	22341	NSS	7/27/94	S. U.	6.09	0.01	
3234402	22349	NSS	7/27/94	S. U.	9.37	0.01	
3234403	24009	NSS	7/27/94	S. U.	6.62	0.01	
3234404	22342	NSS	7/27/94	S. U.	5.70	0.01	
3234405	22342	NSS	7/27/94	S. U.	6.31	0.01	

General Chemistry Reactive Cyanide

Client: GeoCon, Inc.

Client Reference No.: X231B

LSDG: 32344

Date Received: 7/12/94

Matrix: NSS

Method: Section 7.3

<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Date Analyzed</i>	<i>Units</i>	<i>Dilution Factor</i>	<i>Result</i>	<i>Detection Limit</i>	<i>Flag</i>
3234401	22341	7/18/94	mg/kg	1.0	BQL	0.25	
3234402	22349	7/18/94	mg/kg	1.0	BQL	0.33	
3234403	24009	7/18/94	mg/kg	1.0	0.26	0.26	
3234404	22342	7/18/94	mg/kg	1.0	BQL	0.28	
3234405	24010	7/18/94	mg/kg	1.0	BQL	0.31	

BQL = Below Quantitation Limit

Pesticide TCLP Analytical Results

40 CFR 261, June 29, 1990

Client: GeoCon, Inc.
Lab Sample ID: 3234403
Matrix: Leachate

Client Sample ID: 24009
Client Project Code: X231B
Date Received: 7/12/94
Date of Extraction: 7/15/94

<i>CAS Number</i>	<i>Compound</i>	<i>Dilution</i>	<i>Date of Analysis</i>	<i>Result mg/l</i>	<i>PQL mg/l</i>	<i>MCL mg/l</i>	<i>Note</i>
58899	Gamma-BHC	1	8/9/94	BQL	0.000250	0.4	
76448	Heptachlor	1	8/9/94	BQL	0.000250	0.008	
72208	Endrin	1	8/9/94	BQL	0.000500	0.02	
72435	Methoxychlor	1	8/9/94	BQL	0.00250	10	
57749	Chlordane	1	8/9/94	BQL	0.00500	0.03	
8001352	Toxaphene	1	8/9/94	BQL	0.0250	0.5	

PQL = Practical Quantitation Limit

BQL = Below Quantitation Limit

MCL = Maximum Contaminant Level

Semivolatile TCLP Analytical Results
40 CFR 261, June 29, 1990

Client: GeoCon, Inc
 Lab Sample ID: 3234403
 Matrix: Water
 Date Leached: 7/13/94

Client Reference No.: X231B
 Client Sample No.: 24009
 Date Received: 7/12/94
 Date Extracted: 7/15/94

CAS Number	Compound Name	Analysis Date	Dilution Factor	Result mg/l	PQL mg/l	MCL mg/l	Note
106467	1,4-Dichlorobenzene	8/5/94	1	BQL	0.100	7.5	
95487	2-Methylphenol	8/5/94	1	BQL	0.100	200	
108394	3-Methylphenol	8/5/94	1	BQL	0.100	200	
106445	4-Methylphenol	8/5/94	1	BQL	0.100	200	
NA	Total-Methylphenol	8/5/94	1	BQL	0.100	200	
67721	Hexachloroethane	8/5/94	1	BQL	0.100	3.0	
98953	Nitrobenzene	8/5/94	1	BQL	0.100	2.0	
87683	Hexachlorobutadiene	8/5/94	1	BQL	0.100	0.5	
88062	2,4,6-Trichlorophenol	8/5/94	1	BQL	0.100	2.0	
95954	2,4,5-Trichlorophenol	8/5/94	1	BQL	0.100	400	
121142	2,4-Dinitrotoluene	8/5/94	1	BQL	0.100	0.13	
118741	Hexachlorobenzene	8/5/94	1	BQL	0.100	0.13	
87865	Pentachlorophenol	8/5/94	1	BQL	0.500	100	
110861	Pyridine	8/5/94	1	BQL	0.100	5.0	

MCL = Maximum Concentration Limit
 PQL = Practical Quantitation Limit
 BQL = Below Quantitation Limit

Volatile Organic Analytical Results
SW-846 Method 8010

Client: GeoCon, Inc.
 Lab Sample ID: 3234403
 Matrix: NSS
 Level: Medium

Client Sample No.: 24009
 Client Project Code: X231B
 Date Received: 7/12/94

CAS Number	Compound Name	Analysis Date	Dilution Factor	Result ug/kg	PQL ug/kg	Note
75694	Trichlorofluoromethane	7/22/94	1	BQL	25	
75354	1,1-Dichloroethene	7/22/94	1	BQL	10	
75092	Methylene Chloride	7/22/94	1	BQL	50	
156605	trans-1,2-Dichloroethene	7/22/94	1	BQL	10	
75343	1,1-Dichloroethane	7/22/94	1	BQL	10	
67663	Chloroform	7/22/94	1	BQL	10	
71556	1,1,1-Trichloroethane	7/22/94	1	26	10	
107062	1,2-Dichloroethane	7/22/94	1	BQL	10	
79016	Trichloroethene	7/22/94	1	130	10	
79005	1,1,2-Trichloroethane	7/22/94	1	BQL	10	

Waste Stream Number: 700-12

Waste Stream Title: Tank Residue

PORTS MSDS #: 5335

PRODUCT: TRICHLOROETHYLENE

PART NUMBER:

FORMULA: CHCL=CCL2

KEYWORD: DEGREASER

PORTS NUMBER: NNN

PORTS MISC INFO:

95-20-7820

PORTS RATING: HFR=210

MANUFACTURER:
PPG INDUSTRIES, INC.
ONE PPG PLACE
PITTSBURGH
PA

15272

PHONE: PHONE:

EMERGENCY PHONE: 304-843-1300

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	BT 187 190 F	NOTE: 86-88'C @ 760 MM HG.
Melting Point. . . .	EQ -123.5 F	NOTE: -86.4'C.
Freezing Point. . . .	EQ -123.5 F	NOTE: -86.4'C.
our Point.	NG	
ftening Point. . . .	NG	
Specific Gravity . . .	EQ 1.465	NOTE: @ 20/20'C.
Vapor Pressure	EQ 57.8	NOTE: MM HG, @ 20'C.
Vapor Density.	EQ 4.54	
Percent Volatiles. . .	EQ 100	
Evaporation Rate . . .	EQ .28	NOTE: ETHYL ETHER=1.
pH	BT 6.7 7.5	
Molecular Weight . . .	NG	
Viscosity.	NG	
Solubility in Water. .	0.11% BY WEIGHT.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH ETHER-LIKE ODOR / BULK		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NO	NOTE: NONE.
Flash Point, Open Cup . . .	NO	NOTE: NONE.
Fire Point.	NG	
Auto Ignition.	NG	
Explosive/Flammable Limits		
Lower (LEL).	EQ 7.8	NOTE: VOLUME.
Upper (UEL).	EQ 52	NOTE: VOLUME.

Shipping Regulations

UN/NA Number. UN1710
D.O.T. Hazard Class. . . . 6.1
Label NOT GIVEN
Proper Shipping Name . . . TRICHLOROETHYLENE

=====

Preparer/Contact Information: R. KENNETH LEE, MANAGER, PRODUCT SAFETY

Date Prepared/Revised 5/31/94

===== Component Information =====

TRICHLOROETHYLENE
OSHA PEL (PPM): 50
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 50
ACGIH TLV (MG/M3):
STEL (PPM): 200
STEL (MG/M3):
Product #: GT 99
C.A.S. No.: 79016

Note:

STABILIZED / OSHA STEL / ACGIH STEL: 100 PPM / PPG

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

TRADE NAME: TRICHLOROETHYLENE

CHEMICAL NAME/SYNONYMS: TRICHLOROETHENE, TRICHLOROETHYLENE, TRICHLOR

CHEMICAL FAMILY: HALOGENATED HYDROCARBONS

MSDS NUMBER: 0085

EDITION: 013

CAS NUMBER: 000079 01 6

S. DOT HAZARD CLASS: 6.1 (HARMFUL - STOW AWAY FROM FOODSTUFFS)

SUBSIDIARY RISK: N/A

PACKING GROUP: III

REPORTABLE QUANTITY: 100 LBS/45.4 KG

MSDS NUMBER: 0085

EDITION: 013

* DO NOT SHIP LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS.

24-HOUR EMERGENCY ASSISTANCE: (304) 843-1300

MANUFACTURER'S NAME AND ADDRESS:

PPG INDUSTRIES, INC.
ONE PPG PLACE
PITTSBURGH, PA 15272

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

HEAT OF SOLUTION: N/A

===== INGREDIENTS =====

SEE COMPONENT INFORMATION.

MATERIAL

TRICHLOROETHYLENE (STABILIZED)

OTE: TESTED MIXTURE

===== FIRE/EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

EXTINGUISHING MEDIA: WATER, DRY CHEMICALS OR CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR
NIOSH/MSHA-
APPROVED PRESSURE-DEMAND, SELF-CONTAINED BREATHING APPARATUS FOR
POSSIBLE
EXPOSURE TO HYDROGEN CHLORIDE AND POSSIBLY TRACES OF PHOSGENE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: VAPORS CONCENTRATED IN A
CONFINED OR
POORLY VENTILATED AREA CAN BE IGNITED UPON CONTACT WITH A HIGH
ENERGY SPARK,
FLAME, OR HIGH INTENSITY SOURCE OF HEAT. THIS CAN OCCUR AT
CONCENTRATIONS
RANGING BETWEEN 7.8-52% BY VOL. DECOMPOSITION OR BURNING CAN
PRODUCE HYDROGEN
CHLORIDE OR POSSIBLY TRACES OF PHOSGENE.

===== HEALTH HAZARD DATA =====

TOXICITY DATA:

LC50 INHALATION: LCLO(RATS) - 8000 PPM/4 HOUR
LD50 DERMAL: NOT DETERMINED
SKIN/EYE IRRITATION: SEE EFFECTS OF OVEREXPOSURE SECTION
LD50 INGESTION: (RAT) - 4900-7000 MG/KG
FISH, LC50 (LETHAL CONCENTRATION): SEE EFFECTS OF OVEREXPOSURE
SECTION

CLASSIFICATION:

INHALATION: SLIGHTLY TOXIC
SKIN: NOT DETERMINED
SKIN/EYE: SKIN-MILDLY IRRITATING/EYE-IRRITANT
INGESTION: SLIGHTLY TO MODERATELY TOXIC
AQUATIC: SEE EFFECTS OF OVEREXPOSURE SECTION

===== EFFECTS OF OVEREXPOSURE =====

IS CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN:

NTP: NO
IARC: NO
OSHA: NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN

PERMISSIBLE EXPOSURE LIMITS:

OSHA: 50 PPM, 8-HOUR TWA (TIME-WEIGHTED AVERAGE); 200 PPM,
15-MINUTE STEL
'SHORT-TERM EXPOSURE LIMIT'); 29 CFR 1910.1000, TABLE Z.2, REV.
'1/89.

NOTE: THE 1971 LIMIT IS 100 PPM, 8-HOUR TWA.

ACGIH: 50 PPM, 8 HOUR TWA; 100 PPM, 15-MINUTE STEL.

PPG INTERNAL PERMISSIBLE EXPOSURE LIMIT: 50 PPM, 8-HOUR TWA.

JTE:

INHALATION: TRICHLOROETHYLENE IS A CENTRAL NERVOUS SYSTEM DEPRESSANT WHICH CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, DIZZINESS, NAUSEA, HEADACHE, LOSS OF COORDINATION AND EQUILIBRIUM, POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE, UNCONSCIOUSNESS AND DEATH IN CONFINED OR POORLY VENTILATED AREAS. FATALITIES FOLLOWING SEVERE ACUTE EXPOSURE HAVE BEEN ATTRIBUTED TO VENTRICULAR FIBRILLATION RESULTING IN CARDIAC FAILURES.

EYE/SKIN: LIQUID SPLASHED IN THE EYE CAN RESULT IN DISCOMFORT, PAIN AND IRRITATION. PROLONGED OR REPEATED CONTACT WITH LIQUID ON THE SKIN CAN CAUSE IRRITATION AND DERMATITIS. THE PROBLEM MAY BE ACCENTUATED BY LIQUID BECOMING TRAPPED AGAINST THE SKIN BY CONTAMINATED CLOTHING AND SHOES, AND SKIN ABSORPTION CAN OCCUR.

INGESTION: SWALLOWING OF THIS MATERIAL MAY RESULT IN IRRITATION OF THE MOUTH AND GI TRACT ALONG WITH OTHER EFFECTS AS LISTED ABOVE FOR INHALATION. VOMITING AND SUBSEQUENT ASPIRATION INTO THE LUNGS MAY LEAD TO CHEMICAL PNEUMONIA AND PULMONARY EDEMA WHICH IS A POTENTIALLY FATAL CONDITION.

CHRONIC: PROLONGED EXPOSURE ABOVE THE OSHA PERMISSIBLE LIMITS MAY RESULT IN LIVER AND KIDNEY DAMAGE. TRICHLOROETHYLENE HAS BEEN EXTENSIVELY STUDIED FOR CHRONIC EFFECTS IN ANIMALS. WHILE THERE ARE STUDIES IN WHICH TUMORS WERE INDUCED IN MICE, THERE IS NO EVIDENCE THAT TRICHLOROETHYLENE POSES A CARCINOGENIC RISK TO HUMANS. TRICHLOROETHYLENE IS LISTED IN GROUP 3 BY IARC AND IS NOT LISTED BY NTP OR OSHA.

TOXICITY DATA:

AQUATIC DATA:

SHEEPSHEAD MINNOWS: 96-HOUR LC50 - 52 MG/L SLIGHTLY TOXIC
MYSID SHRIMP: 96-HOUR LC50 - 14 MG/L SLIGHTLY TOXIC
MARINE ALGA: 96-HOUR EC50 - 95 MG/L SLIGHTLY TOXIC

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

EYE OR SKIN CONTACT: FLUSH EYES AND SKIN WITH PLENTY OF WATER SOAP AND WATER FOR SKIN) FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. IF IRRITATION OCCURS, CONSULT A PHYSICIAN. THOROUGHLY CLEAN

CONTAMINATED CLOTHING AND SHOES BEFORE REUSE OR DISCARD.

INGESTION:

IF CONSCIOUS: DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING.
TAKE IMMEDIATELY TO A HOSPITAL OR PHYSICIAN.

IF UNCONSCIOUS: OR IN CONVULSIONS, TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN (INCLUDES ANTIDOTES): ONLY ADMINISTER ADRENALINE AFTER CAREFUL CONSIDERATION FOLLOWING TRICHLOROETHYLENE OVEREXPOSURE. INCREASED SENSITIVITY OF THE HEART TO ADRENALINE MAY BE CAUSED BY OVEREXPOSURE TO TRICHLOROETHYLENE.

===== REACTIVITY DATA =====

STABILITY: STABLE.

CONDITIONS TO AVOID: AVOID OPEN FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

CONDITIONS TO AVOID: NONE.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID CONTAMINATION WITH CAUSTIC SODA, CAUSTIC POTASH OR OXIDIZING MATERIALS. SHOCK SENSITIVE COMPOUNDS MAY BE FORMED.

HAZARDOUS DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE AND POSSIBLY TRACES OF PHOSGENE.

===== SPILL OR LEAK PROCEDURES =====

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED: IMMEDIATELY EVACUATE THE AREA AND PROVIDE MAXIMUM VENTILATION. UNPROTECTED PERSONNEL SHOULD MOVE UPWIND OF SPILL. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN/EYE PROTECTION (SEE SPECIAL PROTECTION INFORMATION SECTION) SHOULD BE PERMITTED IN AREA. DIKE AREA TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIAL ON ADSORBENTS, SUCH AS SAWDUST OR VERMICULITE, AND SWEEP INTO CLOSED CONTAINERS FOR DISPOSAL. AFTER ALL VISIBLE TRACES, INCLUDING IGNITABLE VAPORS, HAVE BEEN REMOVED, THOROUGHLY WET VACUUM THE AREA. DO NOT FLUSH TO SEWER. IF AREA OF PILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH, GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD: CONTAMINATED SAWDUST, VERMICULITE OR POROUS

SURFACE
MUST BE DISPOSED OF IN A PERMITTED HAZARDOUS WASTE MANAGEMENT
FACILITY.
COVERED LIQUIDS MAY BE REPROCESSED OR INCINERATED OR MUST BE
TREATED IN A
PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN
WHEN USING
OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO
PREVENT
ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE
CHEMICAL
MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR
ACT, THE
CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AS
WELL AS ANY
OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING
DISPOSAL.

===== SPECIAL PROTECTION INFORMATION =====

RESPIRATORY PROTECTION: USE A HALF OR FULL FACEPIECE ORGANIC VAPOR
CHEMICAL
CARTRIDGE OR CANISTER RESPIRATOR WHEN CONCENTRATIONS EXCEED THE
PERMISSIBLE
LIMITS. USE SELF-CONTAINED BREATHING APPARATUS (SCBA) OR FULL
FACEPIECE
AIRLINE RESPIRATOR WITH AUXILIARY SCBA OPERATED IN THE
PRESSURE-DEMAND MODE
FOR EMERGENCIES AND FOR ALL WORK PERFORMED IN STORAGE VESSELS,
POORLY
VENTILATED ROOMS, AND OTHER CONFINED AREAS. RESPIRATORS MUST BE
APPROVED BY
NIOSH/MSHA. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA AND
THE
MANUFACTURER MUST BE OBSERVED. RESPIRATORY PROTECTION PROGRAMS MUST
BE IN
ACCORDANCE WITH 29CFR 1910.134.

VENTILATION (TYPE): USE LOCAL EXHAUST OR DILUTION VENTILATION AS
APPROPRIATE
TO CONTROL EXPOSURES TO BELOW PERMISSIBLE LIMITS.

EYE PROTECTION: SPLASHPROOF GOGGLES

GLOVES: VITON(R), SILVER SHIELD(R), POLYVINYL ALCOHOL (DEGRADES IN
WATER).

OTHER PROTECTIVE EQUIPMENT: BOOTS, APRONS, OR CHEMICAL SUITS SHOULD
BE USED
WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE
CLOTHING AND USE
OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29 CFR 1910.132 AND 29 CFR
1910.133.

===== SPECIAL PRECAUTIONS =====

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORING:

DO NOT USE IN POORLY VENTILATED OR CONFINED SPACES WITHOUT PROPER
RESPIRATORY PROTECTION (SEE SPECIAL PROTECTION INFORMATION
SECTION).

TRICHLOROETHYLENE VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN
LOW
AREAS.

KEEP CONTAINER CLOSED WHEN NOT IN USE.

STORE ONLY IN CLOSED, PROPERLY LABELED CONTAINERS.

LIQUID OXYGEN OR OTHER STRONG OXIDANTS MAY FORM EXPLOSIVE MIXTURES WITH TRICHLOROETHYLENE.

THIS MATERIAL OR ITS VAPORS WHEN IN CONTACT WITH FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS CAN DECOMPOSE TO FORM HYDROGEN CHLORIDE GAS AND TRACES OF PHOSGENE..

AVOID CONTAMINATION OF WATER SUPPLIES. HANDLING, STORAGE AND USE PROCEDURES MUST BE CAREFULLY MONITORED TO AVOID SPILLS OR LEAKS. ANY SPILL OR LEAK HAS THE POTENTIAL TO CAUSE UNDERGROUND WATER CONTAMINATION WHICH MAY, IF SUFFICIENTLY SEVERE, RENDER A DRINKING WATER SOURCE UNFIT FOR HUMAN CONSUMPTION. CONTAMINATION THAT DOES OCCUR CANNOT BE EASILY CORRECTED.

A CHLORINATED SOLVENT USED AS A FLASHPOINT SUPPRESSANT MUST BE ADDED IN SUFFICIENT QUANTITY OR THE RESULTANT MIXTURE MAY HAVE A FLASHPOINT LOWER THAN THE FLAMMABLE COMPONENT.

DO NOT USE CUTTING OR WELDING TORCHES ON DRUMS THAT CONTAINED TRICHLOROETHYLENE UNLESS PROPERLY PURGED AND CLEANED.

DO NOT SHIP LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS. THE ONLY EXCEPTION IS TYPE 145 VAPOR DEGREASING GRADE.

OTHER PRECAUTIONS: DO NOT BREATHE VAPORS. HIGH VAPOR CONCENTRATIONS CAN CAUSE DIZZINESS, UNCONSCIOUSNESS OR DEATH. LONG-TERM OVEREXPOSURE MAY CAUSE LIVER/KIDNEY INJURY AND POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE.

USE ONLY WITH ADEQUATE VENTILATION. VENTILATION MUST BE SUFFICIENT TO LIMIT EMPLOYEE EXPOSURE TO TRICHLOR BELOW PERMISSIBLE EXPOSURE LIMITS. OBSERVANCE OF LOWER LIMITS IS ADVISABLE (OUTLINED IN EFFECTS OF OVEREXPOSURE SECTION). EYE IRRITATION, DIZZINESS AND/OR DRUNKENNESS ARE SIGNS OF OVEREXPOSURE.

AVOID CONTACT WITH EYES. WILL CAUSE IRRITATION AND PAIN.

AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OR DERMATITIS.

DO NOT SWALLOW. SWALLOWING MAY CAUSE INJURY OR DEATH.

DO NOT EAT, DRINK, OR SMOKE IN WORK AREAS.

COMMENTS:

TSCA: TRICHLOROETHYLENE IS ON THE TSCA INVENTORY UNDER CAS 79-01-6.

SARA TITLE III: A) 311/312 CATEGORIES - ACUTE AND CHRONIC, B) LISTED IN

SECTION 313 UNDER TRICHLOROETHYLENE, C) NOT LISTED AS AN "EXTREMELY HAZARDOUS
SUBSTANCE" IN SECTION 302.

RCRA: LISTED IN TABLE 302.4 OF 40 CFR PART 302 AS A HAZARDOUS SUBSTANCE WITH A REPORTABLE QUANTITY OF 100 POUNDS. RELEASES TO AIR, LAND OR WATER WHICH EXCEED THE RQ MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

RCRA: WASTE TRICHLOR AND CONTAMINATED SOILS/MATERIALS FROM SPILL CLEANUP AND U228 HAZARDOUS WASTE AS PER 40 CFR 261.33 AND MUST BE DISPOSED OF ACCORDINGLY UNDER RCRA. SEE 40 CFR 261.33(C) AND 261.7 (B) (3) FOR CLEANING REQUIREMENTS FOR EMPTY CONTAINERS.

CALIFORNIA PROP. 65: THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

NEW JERSEY RIGHT-TO-KNOW: ALSO CONTAINS BUTYLENE OXIDE (CAS NO. 106-88-7)

CANADIAN WHMIS: A) SENSITIZATION TO PRODUCT: NONE KNOWN, B) REPRODUCTIVE TOXICITY: NONE KNOWN, C) ODOR THRESHOLD: NOT KNOWN, D) PRODUCT USE: DEGREASING SOLVENT, E) REQUIRES POISON SYMBOL (CLASS D.1).

REVISIONS MADE TO 7/12/93, 12TH EDITION: DATE, EDITION, NOTE
RECORDING
MINIMUM TRAILERS ADDED TO IDENTIFICATION SECTION AND HANDLING
PRECAUTIONS
(SPECIAL PRECAUTIONS SECTION), UPDATED PERMISSIBLE EXPOSURE LIMITS
(EFFECTS
OF OVEREXPOSURE SECTION).

Waste Stream Number: 700-13

Waste Stream Title: Oil

Waste Stream 700-13

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 951113-141 Project: ER 9567D Requisition Number: 018844
Customer Sample ID: VER34230001 Customer: ENV RERSTORATION
Date Sampled: 9-NOV-1995 09:15 Date Sample Received: 10-NOV-1995
Sampled By: R CAUDILL Date Sample Completed: 9-JAN-1996
Material Description: WASTE OIL X-7725

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
ACD-5101	Density	0.88		g/mL	ML STEWART	27-NOV-1995	95081247
SW846-1010	Flash Point	>104		oC	ML STEWART	2-DEC-1995	95081275
SW846-3051	Sample Prep Metals	COMPLETE			ML STEWART	27-NOV-1995	112795-078
SW846-3580	Sample Prep PCB	COMPLETE			DK SCAGGS	13-NOV-1995	95160360
	Sample Prep Semi-Volatiles	COMPLETE			BD FUHR	22-NOV-1995	95160356
SW846-6010A	Arsenic	5.4UN*		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Barium	.09UNJ		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Cadmium	.28UN		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Chromium	.41NJ		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Lead	2.8NJ		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Selenium	7.3U		ug/L	DA BOWDLE	27-NOV-1995	95081372
	Silver	.18UN		ug/L	DA BOWDLE	27-NOV-1995	95081372
SW846-7470	Mercury	25U		ug/L	RB COLLEY	20-NOV-1995	95081226
SW846-8080	PCB-1232	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	PCB-1242	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	PCB-1248	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	PCB-1254	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	PCB-1260	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	PCB-1268	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
	Total PCB	<2		ug/g	DH BLUE	18-DEC-1995	95161218M5
SW846-9010A	Total Cyanide	1UNJ		mg/kg	SL LEMASTER	22-NOV-1995	95101648
SW846-9020A	TOX	< 10.0		ug/g	DE COLLINS	16-NOV-1995	95161116T4
SW846-9031	Sulfide	3580		mg/kg	SL LEMASTER	21-DEC-1995	95101797
TSD553-230	Gross Alpha	<0.1		pCi/mL	SC BARKER	3-JAN-1996	96070001
	Gross Beta	<0.3		pCi/mL	SC BARKER	3-JAN-1996	96070001
T	Technetium	<1.0		pCi/mL	JP BREWSTER	3-JAN-1996	96070005
T -440	Cesium-134	<0.1	0.04	pCi/g	WC ZUEFLE	20-NOV-1995	95071755
	Cesium-137	<0.2	0.01	pCi/g	WC ZUEFLE	20-NOV-1995	95071755

	Cobalt-60	<0.3	0.01	pCi/g	WC ZUEFLE	20-NOV-1995	95071755
	Gross Gamma	0.0		pCi/g	WC ZUEFLE	20-NOV-1995	95071755
TL	% U-235	ND		%	CD GOOD	13-DEC-1995	95071872
	Alpha Activity	<1		pCi/mL	BW SHORT	13-DEC-1995	95071872
	Americium-241	<0.029		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Neptunium-237	<0.018		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Plutonium-238	<0.018		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Plutonium-239/240	<0.048		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Protactinium-234	<0.023		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Thorium-228	<0.21		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Thorium-230	<0.13		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Thorium-232	<0.13		pCi/mL	CD GOOD	13-DEC-1995	95071872
	Thorium-234	0.023	0.018	pCi/mL	CD GOOD	13-DEC-1995	95071872
	Uranium	0.068	0.052	ug/mL	CD GOOD	13-DEC-1995	95071872

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Arsenic	36.36	19.64	54.02
Barium	36.36	26.18	72.00
Cadmium	36.36	27.06	74.42
Chromium	36.36	23.95	65.87
Lead	36.36	22.43	61.69
Selenium	36.36	37.96	104.40
Silver	36.36	25.99	71.48

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
C. J. Van Meter (Organic Analytical Services)

Date Approved: 12-JAN-1996

***** COMMENT PAGE *****
***** 951113-141 *****

Comments from the Environmental and Industrial Hygiene Laboratory *****

SW846-9010A cyanide result estimated due to low sample spike recovery: 43%.

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Ba qualified as estimate due to calibration verification
not meeting Q. C. limits.

SW846-6010A Ba, Cr, and Pb qualified as estimate due to lab control
sample not meeting Q. C. limits.

***** Comments from the Organic Analytical Services *****

SW846-8260

A broad range of substituted benzenes and alkanes was present on the GC chromatogram at a retention time range of 22 min to 30 min and at a concentration range of 5000ppbJ to 10000ppbJ. Due to oil matrix of sample, which is not conducive to Purge&Trap analysis, sample was unable to be analyzed at a lesser dilution.

SW846-9020A

Sample VER34230001 was analyzed by directly injecting sample into pyrolysis system. This method is outlined in "PROPOSED TEST METHOD FOR TOTAL CHLORINE II BY OXIDATIVE COMBUSTION AND MICROCOULOMETRY". This method was o in the manufacturer and is enclosed with the data package.

--Method SW846-8270A

This sample was prepared by Waste Dilution (SW846-3580) which resulted in the quantitation limits reported.

In this sample, recovery for the surrogate 2-Fluorobiphenyl was slightly above established limits. This also occurred in the MS, MSD, and the waste dilution control prepared with this batch. These limits have been established on a small number of data points and will be updated.

There were 38 TIC's greater than 10% of internal standard areas detected in this sample. These TIC's were library searched, evaluated as to the validity of the search, and quantitation estimates made. The majority of these TIC's were alkanes and substituted alkanes, with many others being left as unknowns. There was also a broad multicomponent band of hydrocarbons eluting from 22 minutes until the end of the analyses. These TIC's are not reported due to the inability of the ANALIS LIMS system for reporting TIC's in an appropriate format. These can be made available in standard laboratory format upon request.

Definition Page for Qualifiers/Flags

951113-141

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
- J - Qualify data for the sample as estimated.
- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
- N - Spike sample recovery is not within control limits.
- R - The reported value is unusable. The value is for informational purposes only.
- S - The reported value was obtained by the Method of Standard Additions (MSA).
- UJ - Qualify data for the sample as estimated.
- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
- * - Duplicate analysis is not within control limits.
relation coefficient for MSA is less than 0.995.
- # - value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 951113-141
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV1
Authorized By: C. J. Van Meter

Customer Sample ID: VER34230001
Customer: ENV RERSTORATION
Sample Matrix: OIL
Requisition Number: 018844
Date Sample Received: 10-NOV-1995
Date Sampled: 9-NOV-1995

RCRA_SEMIVOLATILES

Date Extracted/Prepared: 22-NOV-1995
Analysis Procedure Number: SW846-8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 18-DEC-1995
QA File Number: 95161218801
Dilution Factor: 1.0
Analyst: BD FUHR

CAS		ug/kg	CAS		ug/kg
95-48-7	2-Methylphenol	48100U			
108-39-4	m-Cresol	48100U			
106-44-5	4-Methylphenol	48100U			
87-86-5	Pentachlorophenol	96200U			
95-95-4	2,4,5-Trichlorophenol	48100U			
88-06-2	2,4,6-Trichlorophenol	48100U			
	Total Cresol	NA			
106-46-7	1,4-Dichlorobenzene	48100U			
121-14-2	2,4-Dinitrotoluene	96200U			
118-74-1	Hexachlorobenzene	48100U			
	Hexachloro-1,3-butadiene	48100U			
67-72-1	Hexachloroethane	48100U			
98-95-3	Nitrobenzene	48100U			
110-86-1	Pyridine	48100U			

ANALYSIS DATA REPORT

AnalIS ID: 951113-141
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: C. J. Van Meter

Customer Sample ID: VER34230001
Customer: ENV RERSTORATION
Sample Matrix: OIL
Requisition Number: 018844
Date Sample Received: 10-NOV-1995
Date Sampled: 9-NOV-1995

RCRA_VOLATILES

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 21-NOV-1995
QA File Number: 95161121A3
Dilution Factor: 1000
Analyst: MA NOVOTNY

CAS		ug/kg	CAS		ug/kg
71-43-2	Benzene	2000U			
56-23-5	Carbon Tetrachloride	2000U			
108-90-7	Chlorobenzene	2000U			
67-66-3	Chloroform	2000U			
107-06-2	1,2-Dichloroethane	2000U			
75-35-4	1,1-Dichloroethene	2000U			
78-93-3	2-Butanone	100000U			
127-18-4	Tetrachloroethene	2000U			
79-01-6	Trichloroethene	2000U			
75-01-4	Vinyl Chloride	1000U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

RCRA VOLATILES ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

Analysis ID: 951113-141
Laboratory: Organic Analytical Services
Sample Matrix: OIL
Level: (low/med): LOW
Dilution Factor: 1000

Customer Sample ID: VER34230001
Customer: ENV RERSTORATION
File ID: _____
Date Received: 10-NOV-1995
Date Analyzed: 21-NOV-1995
Concentration Units: ug/kg

Number TICs found: 9

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1. 108-88-3	Toluene	18.0	2600	
2. 100-41-4	Ethyl benzene	20.5	2200	
3. 103-65-1	n-Propylbenzene	22.8	2900	
4. 108-67-8	1,3,5-Trimethylbenzene	23.0	19000	
5. 95-63-6	1,2,4-Trimethylbenzene	23.9	20000	
6. 135-98-8	sec-Butylbenzene	24.2	2300	
7. 104-51-8	p-Isopropylbenzene	24.3	3000	
8. 104-51-8	n-Butylbenzene	25.2	9100	
9. 91-20-3	Naphthalene	29.8	8800	
10.				
11.				
12.				
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25.				
26.				
27.				
28.				
29.				
30.				

Waste Stream Number: U700-14

Waste Stream Title: Mercury Canisters

PORTS MSDS #: 341

PRODUCT: STANDARD, MERCURY 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Hg

KEYWORD: STANDARD

PORTS NUMBER: 00190035-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH

03109
PHONE: PHONE: 603-622-7660
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	~ 212 F	NOTE: ~100'C.
Melting Point. . . .	~ 32 F	NOTE: ~0'C.
Freezing Point . . .	NG	
Pour Point	NG	
Softening Point. . .	NG	
Specific Gravity . . .	~ 1	
Vapor Pressure	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density.	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles. . .	~ 99	NOTE: @ 21'C.
Evaporation Rate . . .	NA	NOTE: NOT APPLI/NOT AVAIL.
pH	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight . . .	EQ 200.59	NOTE: FORMULA WT.
Viscosity.	NG	
Solubility in Water. .	COMPLETE (100%).	
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number.	NG
D.O.T. Hazard Class. . .	NG
Label	NOT GIVEN
Proper Shipping Name . .	CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

===== Component Information =====

.CURY

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 1.0
C.A.S. No.: 7439976

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM):
STEL (MG/M3): 10
Product %: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Mercury Plasma Emission Standard - 10,000 g/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Hg

FORMULA WT.: 200.59

CAS NO.: N/A

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

E COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

MUTAGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of spiratory system

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, kidney dysfunction

CHRONIC EFFECTS: None identified

TARGET ORGANS: Respiratory system, eyes, skin, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting If conscious, give water, milk, or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Nitric Acid

TSCA INVENTORY: Yes

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained

breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; move from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHJ cannot warn of all of the potential dangers of user or interaction with other chemicals or materials. VHJ warrants that the chemical meets the specifications set forth on the label. VHJ DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

Waste Stream Number: 705-1

Waste Stream Title: Alkaline Solution

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-073 Project: P103 ACTA Customer Sample ID: RFD-3013-1

=====

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 7-SEP-1995
Date Sample Approved: 12-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	1.83E1		+/- 4.5E0	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Date Printed: 22-SEP-1995 15:31:15

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-047 Project: P103 003 Customer Sample ID: RFD-3013-1

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9986	14-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.83	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	13	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.83	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.17		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.50		ug/g	SA BURGESS	50914X	14-SEP-1995
6010							
EPA-6010	Chromium	2.2		ug/g	SA BURGESS	50914X	14-SEP-
ACD-096010							
EPA-6010	Silver	< 0.99		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	125		degrees F	CY CRAWMORE	95-13	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WW JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
pH = 13
Date Extracted = 12-SEP-1995
Sample Volume Extracted (mL) = 100
Extraction Method = ACD-1311-Cont. Liq./Liq. Extractor
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950913-023

Date Printed: 22-SEP-1995 15:31:15

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-047 Project: P103 003 Customer Sample ID: RFD-3013-1

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 0916_04.D
Instrument ID: 5972-2
Authorized By: C MEEKAN

Customer: APPLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950913-023
□ : Result has been Corrected for Spike

Date Analyzed: 16-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: MF MCMYLER
QA File Number: MFM-5879

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	100	U				
106-46-7	1,4-Dichlorobenzene	100	U				
95-50-1	1,2-Dichlorobenzene	100	U				
95-48-7	2-Methylphenol	100	U				
106-44-5	4-Methylphenol	100	2 U				
7-72-1	Hexachloroethane	100	U				
95-3	Nitrobenzene	100	U				
6/-68-3	Hexachlorobutadiene	100	U				
88-06-2	2,4,6-Trichlorophenol	100	U				
95-95-4	2,4,5-Trichlorophenol	500	U				
121-14-2	2,4-Dinitrotoluene	100	U				
118-74-1	Hexachlorobenzene	100	U				
87-86-5	Pentachlorophenol	500	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:31:15

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analysis Results

AnaLIS ID: 950907-047 Project: P103 003 Customer Sample ID: RFD-3013-1

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERYAnaLIS ID: 950907-047
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 1.0
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc) Llex
GPC Cleanup: (Y/N) NCustomer Sample ID: RFD-3013-1
Customer: APPLEGATE
File ID: 0916 04.0
Date Received: 6-SEP-1995
Date Analyzed: 16-SEP-1995
Date Extracted: 12-SEP-1995
pH: 13

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC	QC LIMITS # % REC
Nitrobenzene-d5	100.0	63.42	63.4	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	65.00	65.0	43 - 116
Terphenyl-d14	100.0	71.08	71.1	33 - 141
Phenol-d6	200.0	91.90	46.0	10 - 94
2-Fluorophenol	200.0	90.02	45.0	21 - 100
2,4,6-Tribromophenol	200.0	128.73	64.4	10 - 123

Column to be used to flag recovery values with an asterisk
* Values outside of QC limitsSpike Recovery: 0 out of 6 outside limitsCOMMENTS: _____

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 950906-013 Project: ER 9579C Customer Sample ID: RFD30131
Customer: ENV RESTORATION Requisition Number: 017718
Date Sampled: 31-AUG-1995 14:30 Date Sample Received: 5-SEP-1995
Sampled By: MB HAMEL Date Sample Completed: 19-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	12.88		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	2.8		pCi/mL	JP BREWSTER	13-SEP-1995	95071343
TSD553-700	% U-235	3.7	0.80	%	CD GOOD	11-SEP-1995	95071327
	Uranium	2.1	0.26	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
R. E. Charles (Environmental and Industrial Hygiene Laboratory)
J. J. Williams (Organic Analytical Services)
Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-013 *****

Comments from the Organic Analytical Services *****

SW846-8260

Sample was found to be unpreserved (pH=14).

Definition Page for Qualifiers/Flags

950906-013

*** *****

I Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UU - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

Correlation coefficient for MSA is less than 0.995.

Reported value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

- P - Probable Identification.

ANALYSIS DATA REPORT

ANALIS ID: 950906-013
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#3
 Authorized By: J. J. Williams

Customer Sample ID: RFD30131
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 017718
 Date Sample Received: 5-SEP-1995
 Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 12-SEP-1995
 QA File Number: 95160912A3
 Dilution Factor: 1.0
 Analyst: MA NOVOTNY

CAS	ug/L	CAS	ug/L
67-64-1 Acetone	200	100-41-4 Ethyl benzene	2U
71-43-2 Benzene	3	76-13-1 Freon 113	2U
75-27-4 Bromodichloromethane	2U	76-14-2 Freon 114	4U
75-25-2 Bromoform	2U	108-10-1 4-Methyl-2-pentanone	100U
74-83-9 Bromomethane	4U	75-09-2 Methylene Chloride	2U
78-93-3 2-Butanone	100U	79-34-5 1,1,2,2-Tetrachloroethane	2U
75-15-0 Carbon Disulfide	2U	127-18-4 Tetrachloroethene	2U
56-23-5 Carbon Tetrachloride	2U	108-88-3 Toluene	2U
108-90-7 Chlorobenzene	2U	71-55-6 1,1,1-Trichloroethane	6
75-00-3 Chloroethane	4U	79-00-5 1,1,2-Trichloroethane	2U
67-66-3 Chloroform	2U	79-01-6 Trichloroethene	2U
74-87-3 Chloromethane	4U	75-69-4 Trichlorofluoromethane	4U
124-48-1 Dibromochloromethane	2U	75-01-4 Vinyl Chloride	1U
106-46-7 1,4-Dichlorobenzene	2U	1330-20-7 m,p-Xylene	2U
95-50-1 1,2-Dichlorobenzene	2U	95-47-6 o-Xylene	2U
541-73-1 1,3-Dichlorobenzene	2U		
75-34-3 1,1-Dichloroethane	2U		
107-06-2 1,2-Dichloroethane	2U		
75-35-4 1,1-Dichloroethene	2U		
156-59-2 cis-1,2-Dichloroethene	2U		
156-60-5 trans-1,2-Dichloroethene	2U		

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-013
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: RFD30131
Customer: ENV RESTORATION
File ID: _____
Date Received: 5-SEP-1995
Date Analyzed: 12-SEP-1995
Concentration Units: ug/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
=====	=====	=====	=====	=====
1.	1-ethyl-2-hexanol	21.1	40	J
2.	91-20-3 Naphthalene	26.4	5	J
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 950906-013
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD30131
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017718
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-061 Project: P103 ACTA Customer Sample ID: RFD-2161-1

Customer: APPLEGATE Requisition Number:
Date Sampled: 31-AUG-1995 Date Sample Received: 6-SEP-1995
Sampled By: JD/WF Date Sample Completed: 6-SEP-1995
Material Description: AQUEOUS WASTE Date Sample Approved: 12-SEP-1995
Program Manager: MH BARTLING (# 29893) [] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	2.07E2		+/- 3.9E1	dpm/ml	TL DANIELS	TAS-4935	6-SEP-1995

Date Printed: 22-SEP-1995 15:43:29

Page 01 of 03

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-051 Project: P103 003 Customer Sample ID: RFD-2161-1

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9986	14-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	13	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	140	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.82	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	41		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.49		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Chromium	110		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Silver	< 0.99		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	> 200		degrees F	CY CRANMORE	95-12	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WJ JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
pH = 12
Date Extracted = 12-SEP-1995
Sample Volume Extracted (mL) = 100
Extraction Method = ACD-1311-Cont. Liq./Liq. Extractor
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950913-023

Date Printed: 22-SEP-1995 15:43:29

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Analytical Services Organization at K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-051 Project: P103 003 Customer Sample ID: RFD-2161-1

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 0916_09.D
Instrument ID: 5972-2
Authorized By: C. MEEHAN

Customer: APPLGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950913-023

Date Analyzed: 16-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: MF MCHYLER
QA File Number: MFM-S879

[] : Result has been Corrected for Spike

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	100	U				
106-46-7	1,4-Dichlorobenzene	100	U				
95-50-1	1,2-Dichlorobenzene	100	U				
95-48-7	2-Methylphenol	100	U				
106-44-5	4-Methylphenol	380	2J				
77-72-1	Hexachloroethane	100	U				
77-72-1	3-Nitrobenzene	100	U				
77-72-1	Hexachlorobutadiene	100	U				
88-06-2	2,4,6-Trichlorophenol	100	U				
95-95-4	2,4,5-Trichlorophenol	500	U				
121-14-2	2,4-Dinitrotoluene	100	U				
118-74-1	Hexachlorobenzene	100	U				
87-86-5	Pentachlorophenol	500	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:43:29

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-051 Project: P103 003 Customer Sample ID: RFD-2161-1

BNA (TCCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERYANALIS ID: 950907-051Laboratory: Organic Mass Spectroscopy LaboratorySample Matrix: WASTELevel: (low/med): LOWDilution Factor: 1.0% Moisture: not dec. dec.Extraction: (SepF/Cont/Sonc) LlexGPC Cleanup: (Y/N) NCustomer Sample ID: RFD-2161-1Customer: APLEGATEFile ID: 0916 09.0Date Received: 6-SEP-1995Date Analyzed: 16-SEP-1995Date Extracted: 12-SEP-1995pH: 12

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC	QC LIMITS # % REC
Nitrobenzene-d5	100.0	37.74	37.7	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	53.76	53.8	43 - 116
Terphenyl-d14	100.0	68.07	68.1	33 - 141
Phenol-d6	200.0	179.30	89.7	10 - 94
2-Fluorophenol	200.0	130.50	65.3	21 - 100
2,4,6-Tribromophenol	200.0	125.98	63.0	10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-025 Project: ER 9579C Customer Sample ID: RFD21611
 Customer: ENV RESTORATION Requisition Number: 017894
 Date Sampled: 31-AUG-1995 12:30 Date Sample Received: 5-SEP-1995
 Sampled By: MB HANEL Date Sample Completed: 19-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	12.55		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	5.5		pCi/ml	JP BREWSTER	13-SEP-1995	95071343
TSD553-700	% U-235	2.3	0.54	%	CD GOOD	11-SEP-1995	95071327
	Uranium	11	1.6	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)
 Approved: 19-SEP-1995

***** COMMENT PAGE *****
***** 950906-025 *****

Comments from the Organic Analytical Services *****

SW846-8260

Due to sample matrix which contained a large amount of surfactant, the matrix was not able to be analyzed at a lesser dilution. When analyzed at a dilution of one, all internal standards and surrogate standards showed very poor recovery.

In c Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - ~ - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - Value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-025
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD21611
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017894
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 12-SEP-1995
QA File Number: 95160912A3
Dilution Factor: 100
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	10000U	100-41-4	Ethyl benzene	200U
71-43-2	Benzene	200U	76-13-1	Freon 113	200U
75-27-4	Bromodichloromethane	200U	76-14-2	Freon 114	400U
75-25-2	Bromoform	200U	108-10-1	4-Methyl-2-pentanone	10000U
74-83-9	Bromomethane	400U	75-09-2	Methylene Chloride	200U
78-93-3	2-Butanone	10000U	79-34-5	1,1,2,2-Tetrachloroethane	200U
75-15-0	Carbon Disulfide	200U	127-18-4	Tetrachloroethene	200U
56-23-5	Carbon Tetrachloride	200U	108-88-3	Toluene	200U
108-90-7	Chlorobenzene	200U	71-55-6	1,1,1-Trichloroethane	200U
75-00-3	Chloroethane	400U	79-00-5	1,1,2-Trichloroethane	200U
67-66-3	Chloroform	200U	79-01-6	Trichloroethene	200U
74-87-3	Chloromethane	400U	75-69-4	Trichlorofluoromethane	400U
124-48-1	Dibromochloromethane	200U	75-01-4	Vinyl Chloride	100U
106-46-7	1,4-Dichlorobenzene	200U	1330-20-7	m,p-Xylene	200U
95-50-1	1,2-Dichlorobenzene	200U	95-47-6	o-Xylene	200U
541-73-1	1,3-Dichlorobenzene	200U			
75-34-3	1,1-Dichloroethane	200U			
107-06-2	1,2-Dichloroethane	200U			
75-35-4	1,1-Dichloroethene	200U			
156-59-2	cis-1,2-Dichloroethene	200U			
156-60-5	trans-1,2-Dichloroethene	200U			

ANALYSIS DATA REPORT

AnalIS ID: 950906-025
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD21611
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017894
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-072 Project: P103 ACTA Customer Sample ID: RFD-2156-4

=====

Customer:	APPLEGATE	Requisition Number:	
Date Sampled:	31-AUG-1995	Date Sample Received:	6-SEP-1995
Sampled By:	JD/WF	Date Sample Completed:	7-SEP-1995
Material Description:	AQUEOUS WASTE	Date Sample Approved:	12-SEP-1995
Program Manager:	MH BARTLING (# 29893)	[] :	Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	7.64E2		+/- 1.8E1	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Date Printed: 22-SEP-1995 15:30:29

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-046

Project: P103 003

Customer Sample ID: RFD-2156-4

Customer: APPLGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR MUSKEY	9989	12-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.83	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	0.96	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.83	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.17		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
0	Cadmium	< 0.50		ug/g	SA BURGESS	50914X	14-SEP-1995
310							
EPA-6010	Chromium	6.5		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Silver	< 1.00		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	> 200		degrees F	CY CRANMORE	95-13	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WJ JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR MUSKEY
Date Extracted = 12-SEP-1995
Sample Weight Extracted (g) = 1.06
Extraction Method = ACD-1310
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950912-113

Date Printed: 22-SEP-1995 15:30:29

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-046 Project: P103 003 Customer Sample ID: RPD-2156-4

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: D02598.D
Instrument ID: HP-5989
Authorized By: C MEEHAN

Customer: APPLGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950912-113

Date Analyzed: 13-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: AK HEADRICK
QA File Number: AKH-5877

[] : Result has been Corrected for Spike

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	9100	U				
106-46-7	1,4-Dichlorobenzene	9100	U				
95-50-1	1,2-Dichlorobenzene	9100	U				
95-48-7	2-Methylphenol	9100	U				
106-44-5	4-Methylphenol	9100	2 U				
72-1	Hexachloroethane	9100	U				
3-3	Nitrobenzene	9100	U				
67-68-3	Hexachlorobutadiene	9100	U				
88-06-2	2,4,6-Trichlorophenol	9100	U				
95-95-4	2,4,5-Trichlorophenol	45000	U				
121-14-2	2,4-Dinitrotoluene	9100	U				
118-74-1	Hexachlorobenzene	9100	U				
87-86-5	Pentachlorophenol	45000	U				

Q Qual: (U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(Z) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:30:29

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-046 Project: P103 003 Customer Sample ID: RFD-2156-4

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERY

ANALIS ID: 950907-046

Laboratory: Organic Mass Spectroscopy Laboratory

Sample Matrix: WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

% Moisture: not dec. dec.

Extraction: (SepF/Cont/Sonc)

GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-2156-4

Customer: APPLGATE

File ID: D02598.0

Date Received: 6-SEP-1995

Date Analyzed: 13-SEP-1995

Date Extracted: 12-SEP-1995

pH:

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC	QC LIMITS # % REC
Nitrobenzene-d5	100.0	29.24	29.2 *	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	31.20	31.2 *	43 - 116
Terphenyl-d14	100.0	34.35	34.3	33 - 141
Phenol-d6	200.0	37.21	18.6	10 - 94
2-Fluorophenol	200.0	18.74	9.4 *	21 - 100
2,4,6-Tribromophenol	200.0	52.06	26.0	10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 3 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-014 Project: ER 9579C Customer Sample ID: RFD21564
 Customer: ENV RESTORATION Requisition Number: 017717
 Date Sampled: 31-AUG-1995 14:20 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	12.21		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	44.3		pCi/ml	JP BREWSTER	13-SEP-1995	95071343
TSD553-700	% U-235	4.9	1.8	%	CD GOOD	11-SEP-1995	95071327
	Uranium	81	21	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)
 Date Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-014 *****

Comments from the Organic Analytical Services *****

SW846-8260

Sample was found to be unpreserved (pH=14).

Definition Page for Qualifiers/Flags

950906-014

** **** *****

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - Duplicate analysis is not within control limits.
relation coefficient for MSA is less than 0.995.
 - # The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnalIS ID: 950906-014
Laboratory: Organic Analytical Services
File ID:
Instrument ID: 5890#3
Authorized By: J. J. Williams

Customer Sample ID: RFD21564
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017717
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
Analysis Procedure Number: SW846-8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 12-SEP-1995
QA File Number: 95160912A3
Dilution Factor: 10
Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	1100	100-41-4	Ethyl benzene	20U
71-43-2	Benzene	20U	76-13-1	Freon 113	20U
75-27-4	Bromodichloromethane	20U	76-14-2	Freon 114	40U
75-25-2	Bromoform	20U	108-10-1	4-Methyl-2-pentanone	1000U
74-83-9	Bromomethane	40U	75-09-2	Methylene Chloride	310
78-93-3	2-Butanone	1000U	79-34-5	1,1,2,2-Tetrachloroethane	20U
75-15-0	Carbon Disulfide	20U	127-18-4	Tetrachloroethene	31
56-23-5	Carbon Tetrachloride	20U	108-88-3	Toluene	20U
108-90-7	Chlorobenzene	20U	71-55-6	1,1,1-Trichloroethane	20U
75-00-3	Chloroethane	40U	79-00-5	1,1,2-Trichloroethane	20U
67-66-3	Chloroform	20U	79-01-6	Trichloroethene	20U
74-87-3	Chloromethane	40U	75-69-4	Trichlorofluoromethane	40U
124-48-1	Dibromochloromethane	20U	75-01-4	Vinyl Chloride	10U
106-46-7	1,4-Dichlorobenzene	20U	1330-20-7	m,p-Xylene	20U
95-50-1	1,2-Dichlorobenzene	20U	95-47-6	o-Xylene	20U
541-73-1	1,3-Dichlorobenzene	20U			
75-34-3	1,1-Dichloroethane	20U			
107-06-2	1,2-Dichloroethane	20U			
75-35-4	1,1-Dichloroethene	20U			
156-59-2	cis-1,2-Dichloroethene	20U			
156-60-5	trans-1,2-Dichloroethene	20U			

ANALYSIS DATA REPORT

AnaLIS ID: 950906-014
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID:
 Authorized By: J. J. Williams

Customer Sample ID: RFD21564
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 017717
 Date Sample Received: 5-SEP-1995
 Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
 Analysis Procedure Number: TSD554-019
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 14-SEP-1995
 QA File Number: 9516091402
 Dilution Factor: 1.0
 Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site

Oak Ridge, TN 37831

Sample Analyses Results

AnaLIS ID: 950906-064

Project: P103 ACTA

Customer Sample ID: RFD-926-23

Customer: APPLGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: AQUEOUS WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 6-SEP-1995
Date Sample Approved: 12-SEP-1995
[] : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	1.09E2		+/- 7.6E0	dpm/ml	TL DANIELS	TAS-4935	6-SEP-1995

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-054

Project: P103 003

Customer Sample ID: RFD-926-23

Customer: APPLEGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MM BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9986	14-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	<	0.82 R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	<	0.65 R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	<	0.82 R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	<	0.16	ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	<	0.49	ug/g	SA BURGESS	50914X	14-SEP-1995
EPA-6010	Chromium	<	1.6	ug/g	SA BURGESS	50914X	14-SEP-1
ACD-096010							
EPA-6010	Silver	<	0.98	ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	>	170	degrees F	CY CRANMORE	95-12	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	<	0.08	ug/gm	MM JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
pH = 12
Date Extracted = 12-SEP-1995
Sample Volume Extracted (mL) = 100
Extraction Method = ACD-1311-Cont. Liq./Liq. Extractor
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950913-023

***** Comments from the Wet Instrumentation Laboratory *****

THIS SAMPLE BOILED OVER AT 170 DEGREES FAHRENHEIT. 9-14-95 CC

Date Printed: 22-SEP-1995 15:44:24

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analysis Results

Analysis ID: 950907-054 Project: P103 003 Customer Sample ID: RFD-926-23

Date Printed: 22-SEP-1995 15:44:24

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-054 Project: P103 003 Customer Sample ID: RFD-926-23

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 0916_10.D
Instrument ID: 5972-2
Authorized By: C MEEHAN

Customer: APLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950913-023

Date Analyzed: 16-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: MF MCMYLER
QA File Number: MFM-5879

() : Result has been Corrected for Spike

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	100	U				
106-46-7	1,4-Dichlorobenzene	100	U				
95-50-1	1,2-Dichlorobenzene	100	U				
95-48-7	2-Methylphenol	100	U				
106-44-5	4-Methylphenol	100	2 U				
72-1	Hexachloroethane	100	U				
1-3	Nitrobenzene	100	U				
61-68-3	Hexachlorobutadiene	100	U				
88-06-2	2,4,6-Trichlorophenol	100	U				
95-95-4	2,4,5-Trichlorophenol	500	U				
121-14-2	2,4-Dinitrotoluene	100	U				
118-74-1	Hexachlorobenzene	100	U				
87-86-5	Pentachlorophenol	500	U				

Q Qual: (U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:44:24

Page 04 of 04

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950907-054 Project: P103 003 Customer Sample ID: RFD-926-23

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS
SURROGATE SPIKE RECOVERYAnalIS ID: 950907-054
Laboratory: Organic Mass Spectroscopy Laboratory
Sample Matrix: WASTE
Level: (low/med): LOW
Dilution Factor: 1.0
% Moisture: not dec. dec.
Extraction: (SepF/Cont/Sonc) Lex
GPC Cleanup: (Y/N) NCustomer Sample ID: RFD-926-23
Customer: APPLEGATE
File ID: D916 10.0
Date Received: 6-SEP-1995
Date Analyzed: 16-SEP-1995
Date Extracted: 12-SEP-1995
pH: 12

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC #	QC LIMITS % REC
Nitrobenzene-d5	100.0	38.30	38.3	35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	43.76	43.8	43 - 116
Terphenyl-d14	100.0	41.03	41.0	33 - 141
Phenol-d6	200.0	139.23	69.6	10 - 94
2-Fluorophenol	200.0	123.30	61.7	21 - 100
2,4,6-Trifluorophenol	200.0	167.05	83.5	10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS: _____

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

ANALIS ID: 950906-017 Project: ER 9579C Customer Sample ID: RFD92623
 Customer: ENV RESTORATION Requisition Number: 017720
 Date Sampled: 31-AUG-1995 14:50 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 19-SEP-1995

Material Description:

** No comments were made for this sample. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	12.95		ph	BJ STANLEY	7-SEP-1995	95101246
TSD553-380	Technetium	<0.9		pCi/ml	JP BREWSTER	13-SEP-1995	95071343
TSD553-700	% U-235	1.7	0.50	%	CD GOOD	11-SEP-1995	95071327
	Uranium	29	5.7	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 J. J. Williams (Organic Analytical Services)

Date Approved: 19-SEP-1995

Definition Page for Qualifiers/Flags

950906-017

Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 correlation coefficient for MSA is less than 0.995.
 value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

ANALIS ID: 950906-017
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#3
 Authorized By: J. J. Williams

Customer Sample ID: RFD92623
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 017720
 Date Sample Received: 5-SEP-1995
 Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 12-SEP-1995
 QA File Number: 95160912A3
 Dilution Factor: 1.0
 Analyst: MA NOVOTNY

CAS	ug/L	CAS	ug/L
67-64-1 Acetone	370	100-41-4 Ethyl benzene	2U
71-43-2 Benzene	2U	76-13-1 Freon 113	2U
75-27-4 Bromodichloromethane	2U	76-14-2 Freon 114	4U
75-25-2 Bromoform	2U	108-10-1 4-Methyl-2-pentanone	100U
74-83-9 Bromomethane	4U	75-09-2 Methylene Chloride	2U
78-93-3 2-Butanone	100U	79-34-5 1,1,2,2-Tetrachloroethane	2U
75-15-0 Carbon Disulfide	2U	127-18-4 Tetrachloroethene	2U
56-23-5 Carbon Tetrachloride	2U	108-88-3 Toluene	2U
108-90-7 Chlorobenzene	2U	71-55-6 1,1,1-Trichloroethane	2U
75-00-3 Chloroethane	4U	79-00-5 1,1,2-Trichloroethane	2U
67-66-3 Chloroform	2U	79-01-6 Trichloroethene	2U
74-87-3 Chloromethane	4U	75-69-4 Trichlorofluoromethane	4U
124-48-1 Dibromochloromethane	2U	75-01-4 Vinyl Chloride	1U
106-46-7 1,4-Dichlorobenzene	2U	1330-20-7 m,p-Xylene	2U
95-50-1 1,2-Dichlorobenzene	2U	95-47-6 o-Xylene	2U
541-73-1 1,3-Dichlorobenzene	2U		
75-34-3 1,1-Dichloroethane	2U		
107-06-2 1,2-Dichloroethane	2U		
75-35-4 1,1-Dichloroethene	2U		
156-59-2 cis-1,2-Dichloroethene	2U		
156-60-5 trans-1,2-Dichloroethene	2U		

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-017
Laboratory: Organic Analytical Services
Sample Matrix: LIQUID WASTE
Level: (low/med): LOW
Dilution Factor: 1.0

Customer Sample ID: RFD92623
Customer: ENV RESTORATION
File ID: _____
Date Received: 5-SEP-1995
Date Analyzed: 12-SEP-1995
Concentration Units: ug/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	2-heptanone	18.1	10	J
2.	2-ethyl-1-hexanone	21.1	100	J
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

ANALIS ID: 950906-017
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID:
 Authorized By: J. J. Williams

Customer Sample ID: RFD92623
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 017720
 Date Sample Received: 5-SEP-1995
 Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
 Analysis Procedure Number: TSD554-019
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 14-SEP-1995
 QA File Number: 9516091402
 Dilution Factor: 1.0
 Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

AnalIS ID: 950906-071 Project: P103 ACTA Customer Sample ID: RFD-926-8

=====

Customer:	APPLEGATE	Requisition Number:	
Date Sampled:	31-AUG-1995	Date Sample Received:	6-SEP-1995
Sampled By:	JD/WF	Date Sample Completed:	7-SEP-1995
Material Description:	AQUEOUS WASTE	Date Sample Approved:	12-SEP-1995
Program Manager:	MH BARTLING (# 29893)	[] :	Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Limit of Error	Units	Analyst	QA File Number	Date Completed
***** Radiochemistry Laboratory *****								
ACD-160063.R1	Total Activity (Screen)	2.44E2		+/- 1.1E1	dpm/ml	TL DANIELS	TAS-4935	7-SEP-1995

Date Printed: 22-SEP-1995 15:30:13

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Analytical Services Organization at K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

Analysis ID: 950907-045

Project: P103 003

Customer Sample ID: RFD-926-B

Customer: APPLGATE
Date Sampled: 31-AUG-1995
Sampled By: JD/WF
Material Description: WASTE
Program Manager: MH BARTLING (# 29893)

Requisition Number:
Date Sample Received: 6-SEP-1995
Date Sample Completed: 22-SEP-1995
Date Sample Approved: 22-SEP-1995
☐ : Result has been Corrected for Spike

Procedure No.	Analysis	Result	Q Qual	Units	Analyst	QA File Number	Date Completed
***** Organic Sample Preparation Laboratory *****							
ACD-1320	Prep (BNA- Option)	C			JR HUSKEY	9986	14-SEP-1995
***** Spectrochemistry Laboratory *****							
EPA-7060	Arsenic	< 0.78	R	ug/g	CB HAMMONDS	50912A	13-SEP-1995
EPA-7421	Lead	0.78	R	ug/g	CB HAMMONDS	50912B	13-SEP-1995
EPA-7740	Selenium	< 0.78	R	ug/g	CB HAMMONDS	50912C	13-SEP-1995
Q Qual:(R) Result was Revised after Approval.							
***** Inductively Coupled Plasma Laboratory *****							
EPA-6010	Barium	< 0.16		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Cadmium	< 0.47		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
EPA-6010	Chromium	2.8		ug/g	SA BURGESS	50914X	14-SEP-
ACD-096010							
EPA-6010	Silver	0.95		ug/g	SA BURGESS	50914X	14-SEP-1995
ACD-096010							
***** Wet Instrumentation Laboratory *****							
EPA-1010	Flash Point Closed Cup	> 170		degrees F	CY CRANMORE	95-12	14-SEP-1995
***** Mercury Laboratory *****							
EPA-7470	Mercury	< 0.08		ug/gm	WM JOHNSON	50908H	13-SEP-1995

Prep (BNA- Option)

Analyst = JR HUSKEY
pH = 13
Date Extracted = 12-SEP-1995
Sample Volume Extracted (mL) = 100
Extraction Method = ACD-1311-Cont, Liq./Liq. Extractor
Extraction Solvent = Methylene Chloride
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 950913-023

***** Comments from the Wet Instrumentation Laboratory *****

THIS SAMPLE BOILED OVER AT 170 DEGREES FAHRENHEIT, 9-14-95 CC

Date Printed: 22-SEP-1995 15:30:13

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Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-045 Project: P103 003 Customer Sample ID: RFD-926-8

Date Printed: 22-SEP-1995 15:30:13

Page 03 of 04

Analytical Services Organization @ K-25 Site
Oak Ridge, TN 37831
Sample Analyses Results

ANALIS ID: 950907-045 Project: P103 003 Customer Sample ID: RFD-926-8

Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 0916_08.D
Instrument ID: 5972-2
Authorized By: C MEEHAN

Customer: APPLEGATE
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 6-SEP-1995

BNA - Base/Neutral/Acid Compounds (TCLP)

Date Extracted/Prepared: 12-SEP-1995
Regulatory Procedure Number: EPA-8270
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 950913-023

Date Analyzed: 16-SEP-1995
ACD Procedure Number: ACD-240071
Dilution Factor: 1.0
Analyst: MF MCNYLER
QA File Number: MFM-5879

☐ : Result has been Corrected for Spike

CAS	Analysis	ug/L	Q Qual	CAS	Analysis	ug/L	Q Qual
110-86-1	Pyridine	100	U				
106-46-7	1,4-Dichlorobenzene	100	U				
95-50-1	1,2-Dichlorobenzene	100	U				
95-48-7	2-Methylphenol	100	U				
106-44-5	4-Methylphenol	100	2 U				
77-72-1	Hexachloroethane	100	U				
75-3	Nitrobenzene	100	U				
66-68-3	Hexachlorobutadiene	100	U				
88-06-2	2,4,6-Trichlorophenol	100	U				
95-95-4	2,4,5-Trichlorophenol	500	U				
121-14-2	2,4-Dinitrotoluene	100	U				
118-74-1	Hexachlorobenzene	100	U				
87-86-5	Pentachlorophenol	500	U				

Q Qual:(U) Compound was analyzed for but not detected.

(B) Analyte found in blank as well as sample.

(J) Indicates an estimated value.

(N) Presumptive evidence of a compound.

(A) TIC is a suspected aldol-condensation product.

(D) Compounds identified in an analysis at a secondary dilution factor.

(E) Concentrations exceed calibration range of the GC/MS instrument.

(Y) Undistinguishable isomer components.

(2) Cannot be separated from 3-Methylphenol.

Date Printed: 22-SEP-1995 15:30:13

Page 04 of 04

Analytical Services Organization @ K-25 Site

Oak Ridge, TN 37831

Sample Analyses Results

AnalIS ID: 950907-045

Project: P103 003

Customer Sample ID: RFD-926-8

BNA (TCLP) ORGANICS ANALYSIS DATA SHEETS

SURROGATE SPIKE RECOVERY

AnalIS ID: 950907-045

Laboratory: Organic Mass Spectroscopy Laboratory

Sample Matrix: WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

X Moisture: not dec. dec.

Extraction: (SepF/Cont/Sonc) Llex

GPC Cleanup: (Y/N) N

Customer Sample ID: RFD-926-8

Customer: APPLGATE

File ID: 0916 08.D

Date Received: 6-SEP-1995

Date Analyzed: 16-SEP-1995

Date Extracted: 12-SEP-1995

pH: 13

Surrogate Compound	SPIKE ADDED (ug/L)	RESULT (ug/L)	% REC	#	QC LIMITS % REC
Nitrobenzene-d5	100.0	60.01	60.0		35 - 114
1,1'-Biphenyl, 2-Fluoro	100.0	66.66	66.7		43 - 116
Terphenyl-d14	100.0	65.68	65.7		33 - 141
Phenol-d6	200.0	133.05	66.5		10 - 94
2-Fluorophenol	200.0	109.99	55.0		21 - 100
2,4,6-Tribromophenol	200.0	162.70	81.3		10 - 123

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

Lockheed Martin Utility Services

ES&H Laboratory

Analysis Results

AnalIS ID: 950906-008 Project: ER 9579C Customer Sample ID: RFD9268
 Customer: ENV RESTORATION Requisition Number: 017716
 Date Sampled: 31-AUG-1995 14:10 Date Sample Received: 5-SEP-1995
 Sampled By: MB HAMEL Date Sample Completed: 18-SEP-1995

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-9040A	pH	12.49		pH	BJ STANLEY	8-SEP-1995	95101252
TSD553-380	Technetium	7.6		pCi/ml	JP BREWSTER	13-SEP-1995	95071340
TSD553-700	% U-235	5.9	1.6	%	CD GOOD	11-SEP-1995	95071327
	Uranium	25	4.5	ppm	CD GOOD	11-SEP-1995	95071327
TSD554-015	Sample Prep Solvents	COMPLETE			PJ WARD	14-SEP-1995	9516091402

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)

R. E. Charles (Environmental and Industrial Hygiene Laboratory)

J. J. Williams (Organic Analytical Services)

Date Approved: 19-SEP-1995

***** COMMENT PAGE *****

***** 950906-008 *****

Comments from the Organic Analytical Services *****

SW846-8260

Sample was found to be unpreserved (pH=13)

Due to basic pH of sample, when the sample was spiked, the 1,1,2,2-Tetrachloroethane reacted (dehydrohalogenation) and was recovered as trichloroethene, which is a MS/MSD compound. Although the recovery of trichloroethene was high, it still met method criteria.

Definition Page for Qualifiers/Flags

950906-008

*** **

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - ~ - Duplicate analysis is not within control limits.
 - - Correlation coefficient for MSA is less than 0.995.
 - # - Value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

AnaLIS ID: 950906-008
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890#3
 Authorized By: J. J. Williams

Customer Sample ID: RFD9268
 Customer: ENV RESTORATION
 Sample Matrix: LIQUID WASTE
 Requisition Number: 017716
 Date Sample Received: 5-SEP-1995
 Date Sampled: 31-AUG-1995

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 12-SEP-1995
 QA File Number: 95160912A3
 Dilution Factor: 1.0
 Analyst: MA NOVOTNY

CAS		ug/L	CAS		ug/L
67-64-1	Acetone	770	100-41-4	Ethyl benzene	2U
71-43-2	Benzene	2U	76-13-1	Freon 113	2U
75-27-4	Bromodichloromethane	2U	76-14-2	Freon 114	4U
75-25-2	Bromoform	2U	108-10-1	4-Methyl-2-pentanone	100U
74-83-9	Bromomethane	4U	75-09-2	Methylene Chloride	6
78-93-3	2-Butanone	100U	79-34-5	1,1,2,2-Tetrachloroethane	2JU
75-15-0	Carbon Disulfide	2U	127-18-4	Tetrachloroethene	2U
56-23-5	Carbon Tetrachloride	2U	108-88-3	Toluene	2U
108-90-7	Chlorobenzene	2U	71-55-6	1,1,1-Trichloroethane	24
75-00-3	Chloroethane	4U	79-00-5	1,1,2-Trichloroethane	2U
67-66-3	Chloroform	2U	79-01-6	Trichloroethene	2U
74-87-3	Chloromethane	4U	75-69-4	Trichlorofluoromethane	4U
124-48-1	Dibromochloromethane	2U	75-01-4	Vinyl Chloride	1U
106-46-7	1,4-Dichlorobenzene	2U	1330-20-7	m,p-Xylene	2U
95-50-1	1,2-Dichlorobenzene	2U	95-47-6	o-Xylene	2U
541-73-1	1,3-Dichlorobenzene	2U			
75-34-3	1,1-Dichloroethane	2U			
107-06-2	1,2-Dichloroethane	2U			
75-35-4	1,1-Dichloroethene	4			
156-59-2	cis-1,2-Dichloroethene	2U			
156-60-5	trans-1,2-Dichloroethene	2U			

Portsmouth Gaseous Diffusion Plant
Analytical Chemistry Department

VOC ORGANICS ANALYSIS DATA SHEETS
TENTATIVELY IDENTIFIED COMPOUNDS

AnalIS ID: 950906-008

Laboratory: Organic Analytical Services

Sample Matrix: LIQUID WASTE

Level: (low/med): LOW

Dilution Factor: 1.0

Customer Sample ID: RFD9268

Customer: ENV RESTORATION

File ID: _____

Date Received: 5-SEP-1995

Date Analyzed: 12-SEP-1995

Concentration Units: ug/L

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT (mins)	EST. CONC.	Q
1.	2-methyl-butanal	3.5	10	J
2.	3,3-dimethyl-2-butanone	13.2	10	J
3.	104-76-7 2-Ethyl-1-hexanol	21.1	90	J
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

ANALYSIS DATA REPORT

AnalIS ID: 950906-008
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: J. J. Williams

Customer Sample ID: RFD9268
Customer: ENV RESTORATION
Sample Matrix: LIQUID WASTE
Requisition Number: 017716
Date Sample Received: 5-SEP-1995
Date Sampled: 31-AUG-1995

Solvents_F001

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-019
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 14-SEP-1995
QA File Number: 9516091402
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
56-23-5	Carbon Tetrachloride	1000U			
75-09-2	Methylene Chloride	100U			
127-18-4	Tetrachloroethene	100U			
71-55-6	1,1,1-Trichloroethane	100U			
79-01-6	Trichloroethene	100U			

Waste Stream Number: 705-2

Waste Stream Title: Heavy Metal Sludge

Herbicide TCLP Analytical Results

40 CFR 261, June 29, 1990

Client: GeoCon, Inc.

Client Sample ID: 24009

Lab Sample ID: 3234403

Client Project Code: X231B

Matrix: Leachate

Date of Extraction: 7/18/94

CAS Number	Compound	Dilution	Date of Analysis	Result mg/l	PQL mg/l	MCL mg/l	Note
95757	2,4-D	1	7/21/94	BQL	0.0100	10.0	
93721	2,4,5-TP (Silvex)	1	7/21/94	BQL	0.00200	1.00	

PQL = Practical Quantitation Limit

BQL = Below Quantitation Limit

MCL = Maximum Contaminant Level

Volatile TCLP Analytical Results
SW-846 Method 8240

Client: Geocon, Inc.
Lab Sample ID: 3234403
Matrix: Leachate

Client Sample No.: 24009
Client Reference No.: X231B
Date Received: 12-Jul-94
Date Leached: 13-Jul-94

CAS Number	Compound Name	Analysis Date	Dilution Factor	Result mg/L	MCL mg/L	PQL mg/L	Note
71432	Benzene	7/18/94	10	BQL	0.5	0.050	
56235	Carbon Tetrachloride	7/18/94	10	BQL	0.5	0.050	
108907	Chlorobenzene	7/18/94	10	BQL	100.0	0.050	
67663	Chloroform	7/18/94	10	BQL	6.0	0.050	
107062	1,2-Dichloroethane	7/18/94	10	BQL	0.5	0.050	
75354	1,1-Dichloroethene	7/18/94	10	BQL	0.7	0.050	
78933	Methyl ethyl ketone	7/18/94	10	BQL	200.0	1.000	
127184	Tetrachloroethene	7/18/94	10	BQL	0.7	0.050	
79016	Trichloroethene	7/18/94	10	BQL	0.5	0.050	
75014	Vinyl Chloride	7/18/94	10	BQL	0.2	0.100	

MCL = Maximum Contaminant Level

PQL = Practical Quantitation Limit

BQL = Below Quantitation Limit

Trace Metals Analytical Results - TCLP
Method SW-846

Client: GeoCon, Inc.
Client Reference No.: X231B
Client Sample No.: 24009
Date Collected: 7/8/94

Lab Sample ID: 3234403
Date Received: 7/12/94
Date Extracted: 7/13/94
Matrix: TCLP Extract

Analyte	Date Analyzed	Date Digested	Dilution Factor	Maximum Concentration Limit mg/L	Sample Result mg/L	Reporting Limit mg/L	Note
Arsenic	7/27/94	7/25/94	1	5.0	0.17	0.10	
Barium	7/27/94	7/25/94	1	100	<5.0	5.0	
Cadmium	7/27/94	7/25/94	1	1.0	<0.010	0.010	
Chromium	7/27/94	7/25/94	1	5.0	0.16	0.050	
Lead	7/27/94	7/25/94	1	5.0	0.089	0.050	
Mercury	7/20/94	7/20/94	5	0.20	<0.0050	0.0050	
Selenium	7/27/94	7/25/94	1	1.0	0.11	0.10	
Silver	7/27/94	7/25/94	1	5.0	<0.050	0.050	

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 971218-106 Project: ER 9668E Customer Sample ID: VER42633001
Customer: ENV RESTORATION Requisition Number: 54633
Date Sampled: 18-DEC-1997 09:45 Date Sample Received: 18-DEC-1997
Sampled By: B PYLES Date Sample Completed: 22-JAN-1998
Material Description: HEAVY METAL SLUDGE

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3050A	Sample Prep Metals	COMPLETE			ML STEWART	30-DEC-1997	123097-071
SW846-3540B	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	31-DEC-1997	97160348
SW846-6010A	Aluminum	14800BJ		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Antimony	16.7U		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Arsenic	22.5UN		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Barium	7.2B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Beryllium	1.1U		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Cadmium	7.6B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Calcium	1100B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Chromium	425B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Cobalt	16.2B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Copper	7480		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Iron	26800B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Lead	614		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Magnesium	537B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Manganese	696B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Molybdenum	19.4B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Nickel	3480		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Potassium	437B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Selenium	34.5U		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Silver	7.7B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Sodium	70300		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Thallium	23.4U		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Vanadium	22.6B		mg/kg	EL SIMPSON	30-DEC-1997	98080013
	Zinc	2630		mg/kg	EL SIMPSON	30-DEC-1997	98080013
TSD553-280	Gross Alpha	819		pCi/g	JP BREWSTER	15-JAN-1998	98070063
	Gross Beta	3719		pCi/g	JP BREWSTER	15-JAN-1998	98070063
TSD553-385	Technetium	3254		pCi/g	CD GOOD	15-JAN-1998	98070064
TSD553-440	Gross Gamma	COMMENT		pCi/g	WC ZUEFLE	17-JAN-1998	98070069
TSD553-710	% U-235	4.0	0.83	% U-235	CD GOOD	13-JAN-1998	98070040
	Uranium	118	14	ug/g	CD GOOD	13-JAN-1998	98070040

Spill P Very Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Ar	48.08	45.7	95.05
A	48.08	35.0	72.80
Ba	48.08	41.9	87.15
Beryllium	48.08	43.2	89.85
Cadmium	48.08	51.1	106.28
Cobalt	48.08	46.6	96.92
Molybdenum	48.08	44.2	91.93
Potassium	480.8	584.9	121.65
Selenium	48.08	56.6	117.72
Silver	48.08	39.4	81.95
Thallium	48.08	57.5	119.59
Vanadium	48.08	42.2	87.77

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
C. J. Van Meter (Organic Analytical Services)

Date Approved: 22-JAN-1998

***** COMMENT PAGE *****
***** 971218-106 *****

Comments from the Organic Analytical Services *****

Method SW846 8260A

Bromomethane did not pass the continuing calibration and the value is estimated.

Method SW846-82708

4-Nitrophenol was not recovered in MS and MSD extracts for this sample and is not reported 'NR'. 4-Chloro-3-methylphenol had recoveries just below the acceptance criteria as well as established limits in the MS and MSD extracts and is reported as an estimate, "J".

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were:) 2,4-dinitrophenol(32%),4-nitrophenol(16%), 4,6-dinitro-2-methylphenol(21%). However, as mentioned in the above paragraph, 4-nitrophenol was not reported.

***** Comments from the Spectrochemistry/ICP Laboratory *****

SW846-6010A Al qualified as estimate due to possible contamination.

***** Comments from the Radiochemistry Laboratory *****

Th e was not on the chain of custody sheet. If information concerning the gamma scan is needed please call B. W. Short at ext.3857

I . Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - ~ - Correlation coefficient for MSA is less than 0.995.
 - Value is between the LC and the LLD.
- Warning "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

ANALIS ID: 971218-106
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: 5890-3
 Authorized By: C. J. Van Meter

Customer Sample ID: VER42633001
 Customer: ENV RESTORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 54633
 Date Sample Received: 18-DEC-1997
 Date Sampled: 18-DEC-1997

VOC

Date Extracted/Prepared:
 Analysis Procedure Number: SW846-8260A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 24-DEC-1997
 QA File Number: 97161224A3
 Dilution Factor: 10
 Analyst: JN STRICKLAND

CAS	ug/Kg	CAS	ug/Kg
67-64-1 Acetone	500U	100-41-4 Ethyl benzene	20U
71-43-2 Benzene	20U	76-13-1 Freon 113	20U
75-27-4 Bromodichloromethane	20U	76-14-2 Freon 114	40U
75-25-2 Bromoform	20U	108-10-1 4-Methyl-2-pentanone	500U
74-83-9 Bromomethane	40UJ	75-09-2 Methylene Chloride	20U
78-93-3 2-Butanone	500U	79-34-5 1,1,2,2-Tetrachloroethane	20U
75-15-0 Carbon Disulfide	20U	127-18-4 Tetrachloroethene	20U
56-23-5 Carbon Tetrachloride	20U	108-88-3 Toluene	20U
108-90-7 Chlorobenzene	20U	71-55-6 1,1,1-Trichloroethane	20U
75-00-3 Chloroethane	40U	79-00-5 1,1,2-Trichloroethane	20U
67-66-3 Chloroform	20U	79-01-6 Trichloroethene	20U
74-87-3 Chloromethane	40U	75-69-4 Trichlorofluoromethane	40U
124-48-1 Dibromochloromethane	20U	75-01-4 Vinyl Chloride	10U
106-46-7 1,4-Dichlorobenzene	20U	1330-20-7 m,p-Xylene	20U
95-50-1 1,2-Dichlorobenzene	20U	95-47-6 o-Xylene	20U
541-73-1 1,3-Dichlorobenzene	20U		
75-34-3 1,1-Dichloroethane	20U		
107-06-2 1,2-Dichloroethane	20U		
75-35-4 1,1-Dichloroethene	20U		
156-59-2 cis-1,2-Dichloroethene	20U		
156-60-5 trans-1,2-Dichloroethene	20U		

ANALYSIS DATA REPORT

** See comment page for comments. **

ANALIS ID: 971218-106
 Laboratory: Organic Analytical Services
 File ID:
 Instrument ID: SV2
 Authorized By: C. J. Van Meter

Customer Sample ID: VER42633001
 Customer: ENV RESTORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 54633
 Date Sample Received: 18-DEC-1997
 Date Sampled: 18-DEC-1997

Semi-Volatiles

Date Extracted/Prepared: 30-DEC-1997
 Analysis Procedure Number: SW846-82708
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 6-JAN-1998
 QA File Number: 98160107802
 Dilution Factor: 1.0
 Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
59-50-7	4-Chloro-3-methylphenol	1000UJ	606-20-2	2,6-Dinitrotoluene	500U
95-57-8	2-Chlorophenol	500U	78-59-1	Isophorone	500U
120-83-2	2,4-Dichlorophenol	500U	98-95-3	Nitrobenzene	500U
105-67-9	2,4-Dimethylphenol	500U	83-32-9	Acenaphthene	500U
51-28-5	2,4-Dinitrophenol	2500UJ	208-96-8	Acenaphthylene	500U
534-52-1	4,6-Dinitro-2-methylphenol	2500UJ	120-12-7	Anthracene	500U
88-75-5	2-Nitrophenol	500U	56-55-3	Benzo(a)anthracene	500U
100-02-7	4-Nitrophenol	NR	50-32-8	Benzo(a)pyrene	500U
87-86-5	Pentachlorophenol	2500U	191-24-2	Benzo(g,h,i)perylene	500U
108-95-2	Phenol	920	207-08-9	Benzo(k)fluoranthene	500U
88-06-2	2,4,6-Trichlorophenol	500U	218-01-9	Chrysene	500U
117-81-7	bis(2-Ethylhexyl)phthalate	500U	53-70-3	Dibenz(a,h)anthracene	500U
85-68-7	Butylbenzylphthalate	500U	206-44-0	Fluoranthene	500U
84-74-2	Di-n-butylphthalate	6400	86-73-7	Fluorene	500U
84-66-2	Diethylphthalate	500U	193-39-5	Indeno(1,2,3-cd)pyrene	500U
131-11-3	Dimethylphthalate	500U	91-20-3	Naphthalene	500U
117-84-0	di-n-Octylphthalate	500U	85-01-8	Phenanthrene	500U
62-75-9	N-Nitrosodimethylamine	500U	129-00-0	Pyrene	500U
86-30-6	N-Nitrosodiphenylamine	500U	111-44-4	bis(2-Chloroethyl)ether	500U
621-64-7	N-Nitroso-di-n-propylamine	500U	111-91-1	bis(2-Chloroethoxy)methane	500U
121-14-2	2,4-Dinitrotoluene	500U	39638-32-9	bis(2-Chloroisopropyl)ether	500U

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 971218-106
Laboratory: Organic Analytical Services
File ID:
Instrument ID: SV2
Authorized By: C. J. Van Meter

Customer Sample ID: VER42633001
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 54633
Date Sample Received: 18-DEC-1997
Date Sampled: 18-DEC-1997

Semi-Volatiles

Date Extracted/Prepared: 30-DEC-1997
Analysis Procedure Number: SW846-82708
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 6-JAN-1998
QA File Number: 98160107B02
Dilution Factor: 1.0
Analyst: RJ WAWRO

CAS		ug/Kg	CAS		ug/Kg
101-55-3	4-Bromophenyl-phenylether	500U			
7005-72-3	4-Chlorophenyl-phenylether	500U			
91-58-7	2-Chloronaphthalene	500U			
95-50-1	1,2-Dichlorobenzene	500U			
541-73-1	1,3-Dichlorobenzene	500U			
106-46-7	1,4-Dichlorobenzene	500U			
118-74-1	Hexachlorobenzene	500U			
87-68-3	Hexachlorobutadiene	500U			
77-47-4	Hexachlorocyclopentadiene	500U			
67-72-1	Hexachloroethane	500U			
120-82-1	1,2,4-Trichlorobenzene	500U			
110-86-1	Pyridine	500U			
	2-Methylphenol (o-Cresol)	500U			
	3,4-Methylphenol (m,p-Cresol)	500U			
95-95-4	2,4,5-Trichlorophenol	500U			
103-33-3	Azobenzene	500U			
205-99-2	Benzo(b)fluoranthene	500U			

Waste Stream Number: 705-3

Waste Stream Title: Microfiltration Sludge and Filters

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 970407-055 Project: ER 9668E Requisition Number: 52361
 Customer Sample ID: RFD34868W Customer: ENV RESTORATION
 Date Sampled: 3-APR-1997 13:35 Date Sample Received: 7-APR-1997
 Sampled By: BP Date Sample Completed:
 Material Description: microsludge

** See comment page for comments. **
 ** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	25-APR-1997	97170036
TSD553-385	Technetium	4288		pCi/g	JP BREWSTER	20-APR-1997	97070559
TSD553-710	1 U-235	11	2.4	1	CD GOOD	8-APR-1997	97070498
	Uranium	2535	343	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 C. J. Van Meter (TCLP Laboratory)
 Date Approved: 7-MAY-1997

***** COMMENT PAGE *****
***** 970407-055 *****

***** Comments from the TCLP Laboratory *****

Method

A below-range ambient air temperature excursion occurred for 12 hours during agitation. The minimum temperature was 20.1 degrees C (0.9 degrees C outside the required 23 + or - 2 degrees C range).

I an Data Reporting Qualifiers and Flags:

 o ation Qualifiers:

- . reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- T - Indicates an estimated value.
 - detected.
 - reported.
 - analyzed.
 - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-055
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD34868W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 25-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.369			
7440-43-9	Cadmium	0.397			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.018U			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.064B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-055
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD34868W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 25-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-APR-1997
QA File Number: 97080281
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.010U		

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 970407-053 Project: ER 9668E Requisition Number: 52361
 Customer Sample ID: RFD35938W Customer: ENV RESTORATION
 Date Sampled: 3-APR-1997 13:25 Date Sample Received: 7-APR-1997
 Sampled By: BP Date Sample Completed:
 Material Description: microsludge

** No comments were made for this sample. **
 ** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	24-APR-1997	97170036
TSD553-385	Technetium	3525		pCi/g	JP BREWSTER	20-APR-1997	97070559
TSD553-710	U-235	6.8	1.4	%	CD GOOD	8-APR-1997	97070498
	Uranium	2636	340	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 C. J. Van Meter (TCLP Laboratory)
 Date Approved: 7-MAY-1997

Data Reporting Qualifiers and Flags:

Qualification Qualifiers:

- The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- - Indicates an estimated value.
- detected.
- reported.
- not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-053
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35938W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 24-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.266			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.018U			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.066B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-053
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35938W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 24-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-APR-1997
QA File Number: 97080281
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.0100		

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 970407-059 Project: ER 9668E Requisition Number: 52360
 Customer Sample ID: RFD34871W Customer: ENV RESTORATION
 Date Sampled: 3-APR-1997 13:15 Date Sample Received: 7-APR-1997
 Sampled By: BP Date Sample Completed: 7-MAY-1997
 Material Description: microsludge

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	29-APR-1997	97170036
TSDS53-385	Technetium	6303		pCi/g	JP BREWSTER	20-APR-1997	97070560
TSDS53-710	% U-235	8.8	1.9	%	CD GOOD	8-APR-1997	97070498
	Uranium	3767	498	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 C. J. Van Meter (TCLP Laboratory)
 Date Approved: 7-MAY-1997

***** COMMENT PAGE *****
***** 970407-059 *****

***** Comments from the TCLP Laboratory *****

below-range ambient air temperature excursion occurred for 16.5 hours during agitation. The minimum temperature was 19.5 degrees C (1.5 degrees C outside the required 23 ± 2 degrees C range).

Data Reporting Qualifiers and Flags:

Qualification Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- T - Indicates an estimated value.
- D - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT
** See comment page for comments. **

AnalIS ID: 970407-059
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD34871W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.155			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.018U			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.024B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-059
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD34871W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-MAY-1997
QA File Number: 97080295
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7439-97-6	Mercury	0.010U			

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 970407-057 Project: ER 9668E Requisition Number: 52360
Customer Sample ID: RFD35930W Customer: ENV RESTORATION
Date Sampled: 3-APR-1997 13:05 Date Sample Received: 7-APR-1997
Sampled By: BP Date Sample Completed: 7-MAY-1997
Material Description: microsludge

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	29-APR-1997	97170036
TSD553-385	Technetium	2741		pCi/g	JP BREWSTER	20-APR-1997	97070560
TSD553-710	% U-235	7.1		%	CD GOOD	8-APR-1997	97070498
	Uranium	2114	270	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
C. J. Van Meter (TCLP Laboratory)
Date Approved: 7-MAY-1997

***** COMMENT PAGE *****
***** 970407-057 *****

***** Comments from the TCLP Laboratory *****

M. O

A low-range ambient air temperature excursion occurred for 12 hours during agitation. The minimum temperature was 19.5 degrees C (1.5 degrees C outside the required 23 + or - 2 degrees C range).

Data Reporting Qualifiers and Flags:

Qualification Qualifiers:

- C - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- T - Indicates an estimated value.
 - detected.
 - reported.
 - not analyzed.
 - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-057
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35930W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.079			
7440-43-9	Cadmium	0.074			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.025B			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.080B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-057
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35930W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-MAY-1997
QA File Number: 97080295
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7439-97-6	Mercury	0.010U			

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 970407-058 Project: ER 9668E Requisition Number: 52360
Customer Sample ID: RFD35934W Customer: ENV RESTORATION
Date Sampled: 3-APR-1997 13:10 Date Sample Received: 7-APR-1997
Sampled By: BP Date Sample Completed: 7-MAY-1997
Material Description: microsludge

** See comment page for comments. **
** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	29-APR-1997	97170036
TSD553-385	Technetium	8986		pCi/g	JP BREWSTER	20-APR-1997	97070560
TSD553-710	% U-235	7.5		%	CD GOOD	8-APR-1997	97070498
	Uranium	4853	612	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
C. J. Van Meter (TCLP Laboratory)
Date Approved: 7-MAY-1997

***** COMMENT PAGE *****
***** 970407-058 *****

***** Comments from the TCLP Laboratory *****

d 1311

A below-range ambient air temperature excursion occurred for 16.5 hours during agitation. The minimum temperature was 19.5 degrees C (1.5 degrees C outside the required 23 + or - 2 degrees C range).

Definition Page for Qualifiers/Flags
970407-058

g Data Reporting Qualifiers and Flags:

C ration Qualifiers:

- B The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- I - Indicates an estimated value.
- ;
- detected.
- NR - reported.
- NA - not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-058
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35934W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.064			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.025B			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.042B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-058
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35934W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52360
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 29-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-MAY-1997
QA File Number: 97080295
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.0100		

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 970407-054 Project: ER 9668E Requisition Number: 52361
Customer Sample ID: RFD35935W Customer: ENV RESTORATION
Date Sampled: 3-APR-1997 13:30 Date Sample Received: 7-APR-1997
Sampled By: BP Date Sample Completed:
Material Description: microsludge

** No comments were made for this sample. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	2-MAY-1997	050297-008
SW846-1311	TCLP Extraction	COMPLETE			MR KELLEY	24-APR-1997	97170036
TSD553-385	Technetium	6252		pCi/g	JP BREWSTER	20-APR-1997	97070559
TSD553-710	% U-235	7.7	1.6 %		CD GOOD	8-APR-1997	97070498
	Uranium	2192	281	ug/g	CD GOOD	8-APR-1997	97070498

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
C. J. Van Meter (TCLP Laboratory)
Date Approved: 7-MAY-1997

ga- Data Reporting Qualifiers and Flags:

C ration Qualifiers:

- B e reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but gre than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greated than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less tha 0.995.
 - # - The value is between the LC and the LLD.
- Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- D c detected.
- F reported.
- NA c analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-054
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35935W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 24-APR-1997
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 2-MAY-1997
QA File Number: 97080297
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.023U			
7440-39-3	Barium	0.181			
7440-43-9	Cadmium	0.002U			
7440-47-3	Chromium	0.003U			
7439-92-1	Lead	0.018U			
7782-49-2	Selenium	0.036U			
7440-22-4	Silver	0.054B			

ANALYSIS DATA REPORT

** See comment page for comments. **

AnalIS ID: 970407-054
Laboratory: TCLP Laboratory
File ID: 97170036
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: RFD35935W
Customer: ENV RESTORATION
Sample Matrix: SOLID WASTE
Requisition Number: 52361
Date Sample Received: 7-APR-1997
Date Sampled: 3-APR-1997

TCLP_HG_RPT

Date Extracted/Prepared: 24-APR-1997
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-APR-1997
QA File Number: 97080281
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.0100		

Waste Stream Number: 705-4

Waste Stream Title: Oil/Solvents

W
4W

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

705-7

8-75-
#20

AnalIS ID: 920627-006 Project: WMGT RFD Customer Sample ID: RFD-10636
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 25-JUN-1992 Date Sample Received: 25-JUN-1992
Sampled By: B KELLEY Date Sample Completed: 7-DEC-1992
Material Description: VACUUM PUMP OIL

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-8080	PCB (TOTAL)	120		ug/g	PA HUTCHINS	7-JUL-1992	92160140
TSD553-380	Technetium (Waste)	670.0		pCi/mL	JJ SISLER	1-SEP-1992	92070843
TSD553-440	Assay (% U-235, Waste)	3.12		% U-235	JD LITTERAL	22-SEP-1992	92070943
	Total Uranium	1804		PPM U	JD LITTERAL	22-SEP-1992	92070943

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
PCB (TOTAL)	34	34.	100.00

***** Comments from the Organic Analytical Services *****

PCB Analysis: The sample contained an aqueous layer(67% v/v) and an organic layer(33% v/v). The aqueous layer was prepared by SW846-3510 and analyzed by SW846-8080. The results of the analysis of the aqueous layer are as follows:

Total PCB, ug/mL: 0.30
Amount spiked : 2.25
Spike result : 2.2
Percent recovery: 98%

Solvent Analysis: The sample was bi-layer with the same aqueous and organic layer percentage as mentioned in the PCB Analysis. The results of the aqueous layer are as follows:

	ug/ml
Benzene	<2
2-butanone	<3
Carbon tetrachloride	<.1
Chlorobenzene	<.2
Chloroform	2.5
Chlorobenzene	<.1
Chloroethane	2.5
1,1-dichloroethene	.4

$$\frac{296}{\frac{454}{F}} \div \frac{1804}{F} \div \frac{.0312}{F} = 7.56 \text{ gm U}^{235}$$

Tetrachloroethene	30
Trichloroethene	.8
Vinyl chloride	NA

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

Correlation coefficient for MSA is less than 0.995.

- # - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)

D. E. Boyd (Organic Analytical Services)

Date Approved: 8-DEC-1992

AnalIS ID: 920627-006
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-10636
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 25-JUN-1992
Date Sampled: 25-JUN-1992

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-JUL-1992
QA File Number: 92160161
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	160U			
	2-Butanone (MEK)	560			
56-23-5	Carbon Tetrachloride	.4U			
108-90-7	Chlorobenzene	.8U			
67-66-3	Chloroform	17			
	p-Dichlorobenzene	.4U			
107-06-2	1,2-Dichloroethane	17			
75-35-4	1,1-Dichloroethene	1.1			
127-18-4	Tetrachloroethene	90			
79-01-6	Trichloroethene	6.0			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920627-005 Project: WMGT RFD Customer Sample ID: RFD-10157
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 25-JUN-1992 Date Sample Received: 25-JUN-1992
Sampled By: B KELLEY Date Sample Completed: 7-DEC-1992
Material Description: WASTE WATER/OIL

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
TS515-500	Uranium (Waste)	12.8		UG/G	CJ HOLBROOK	6-JUL-1992	92101202
TS553-380	Technetium (Waste)	19.0		pCi/mL	JJ SISLER	1-SEP-1992	92070843
TS553-440	Assay (% U-235, Waste)	6.05		% U-235	JD LITTERAL	28-AUG-1992	92070863

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
URANIUM (WASTE)	40	39.1	97.75

Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

- Correlation coefficient for MSA is less than 0.995.

The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an te.

$$\frac{716/454}{66} / \frac{12.8}{.0605} = 0.25 \text{ g U}^{235}$$

Organic Data Reporting Qualifiers:

- U Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
 Analyte was found in the reagent blank as well as the sample.
 - Indicates an estimated value.
ND - Not detected.
NR - Not reported.
NA - Not analyzed.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

Laboratory Manager: Wayne J. Spetnagel (Radiochemistry Laboratory)
 D. K. Perez (Environmental and Industrial Hygiene Laboratory)
 D. E. Boyd (Organic Analytical Services)
Date Approved: 8-DEC-1992

AnalIS ID: 920627-005
Laboratory: Organic Analytical Services
File ID:
Instrument ID:
Authorized By: D. E. Boyd

Customer Sample ID: RFD-10157
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 25-JUN-1992
Date Sampled: 25-JUN-1992

Solvents_Volatiles

Date Extracted/Prepared:
Analysis Procedure Number: TSD554-015
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 27-JUL-1992
QA File Number: 92160161
Dilution Factor: 1.0
Analyst: PJ WARD

CAS		ug/g	CAS		ug/g
71-43-2	Benzene	10			
	2-Butanone (MEK)	3			
56-23-5	Carbon Tetrachloride	.8			
108-90-7	Chlorobenzene	.20			
67-66-3	Chloroform	.10			
	p-Dichlorobenzene	.10			
107-06-2	1,2-Dichloroethane	.10			
75-35-4	1,1-Dichloroethene	.10			
127-18-4	Tetrachloroethene	.1			
79-01-6	Trichloroethene	.1			
75-01-4	Vinyl Chloride	NA			

Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 705-5

Waste Stream Title: Uranium Recovery Solvents

Customer Smpl Id: VER41895001
F t:X-04-WM BJC09824
j Analyses:LIQUID
Customer:J A APPLGATE
COC#: 059961
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: LIQUID
Protocol:RCRA
Status: APPROVED
Location:

Sampled: 07/09/98 11:00:00
Received: 07/10/98 09:39:51
Needed: 08/14/98 23:59:00
Appföved: 08/14/98 15:44:17

Analy Meth:SW846-6010A QC Batch: Test:6010AMETALS5 Rpt Basis:none Date Approved
Prep Meth: Analyzed:08/13/98 00:00:00 E L SIMPSON Approver: D K PEREZ 08/14/98 15:25

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLR
Aluminum	6.7		ug/L	*J			1		
Antimony	4.0		ug/L	U			1		
Arsenic	2.9		ug/L	U			1		
Barium	0.14		ug/L	U			1		
Beryllium	0.02		ug/L	U			1		
Cadmium	0.23		ug/L	U			1		
Calcium	50.7		ug/L	N			1		
Chromium	1.2		ug/L	U			1		
Cobalt	1.9		ug/L	U			1		
Copper	0.65		ug/L				1		
Iron	1.3		ug/L	J			1		
Lead	2.9		ug/L	NU			1		
Magnesium	9.3		ug/L				1		
Mercury	0.09		ug/L	U			1		
Molybdenum	0.27		ug/L	U			1		
Nickel	0.69		ug/L	U			1		
Potassium	38.9		ug/L	JU			1		
Selenium	3.3		ug/L	JU			1		
Sodium	4.3		ug/L	J			1		
Thallium	3.8		ug/L	U			1		
Vanadium	0.25		ug/L	U			1		
Zinc	1.2		ug/L				1		

Comments: QC File: 98080624

K, Se and Na qualified as estimate due to calibration verification not meeting acceptance limits. Al and Fe qualified as estimate due to lab control samples exceeding acceptance limits.

Analy Meth:PORTS-CEM-OP-5 QC Batch: Test:DIESELPREP Rpt Basis:none Date Approved
Prep Meth: Analyzed:08/11/98 00:00:00 K A DAYS Approver: D K PEREZ 08/14/98 15:21

Portsmouth Analytical Laboratory
Official Report

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
-chloroethoxy)methane	130000		ug/kg	U		130000	2	P	
-chloroethyl) ether	130000		ug/kg	U		130000	2	P	
Bis(2-chloroisopropyl) ether	130000		ug/kg	U		130000	2	P	
Bis(2-ethylhexyl)phthalate	840000		ug/kg			130000	2	P	
Butylbenzylphthalate	130000		ug/kg	U		130000	2	P	
Chrysene	130000		ug/kg	U		130000	2	P	
Di-n-butylphthalate	130000		ug/kg	U		130000	2	P	
Di-n-octylphthalate	130000		ug/kg	U		130000	2	P	
Dibenz(a,h)anthracene	130000		ug/kg	U		130000	2	P	
Diethylphthalate	130000		ug/kg	U		130000	2	P	
Dimethylphthalate	130000		ug/kg	U		130000	2	P	
Diphenyldiazene	130000		ug/kg	U		130000	2	P	
Fluoranthene	130000		ug/kg	U		130000	2	P	
Fluorene	130000		ug/kg	U		130000	2	P	
Hexachlorobenzene	130000		ug/kg	U		130000	2	P	
Hexachlorobutadiene	130000		ug/kg	JU		130000	2	P	
Hexachlorocyclopentadiene	130000		ug/kg	U		130000	2	P	
Hexachloroethane	130000		ug/kg	U		130000	2	P	
Indeno(1,2,3-cd)pyrene	130000		ug/kg	U		130000	2	P	
Isophorone	130000		ug/kg	U		130000	2	P	
N-Nitroso-di-n-propylamine	130000		ug/kg	U		130000	2	P	
N-Nitrosodimethylamine	130000		ug/kg	U		130000	2	P	
N-Nitrosodiphenylamine	130000		ug/kg	U		130000	2	P	
Naphthalene	130000		ug/kg	U		130000	2	P	
Nitrobenzene	130000		ug/kg	U		130000	2	P	
2-chlorophenol	650000		ug/kg	U		650000	2	P	
2-methylphenol	130000		ug/kg	U		130000	2	P	
Phenol	130000		ug/kg	U		130000	2	P	
Pyrene	130000		ug/kg	U		130000	2	P	
Pyridine	130000		ug/kg	U		130000	2	P	

Comments:

There were 4 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(27%), 4,6-dinitro-2-methylphenol(19%), hexachlorbutadiene(16%) and acenaphthylene(16%).

Because the sample appeared to be an oil, the waste dilution sample preparation was diluted by an additional factor of 2 to minimize sample matrix effects.

Recovery of the 2nd surrogate standard compound, phenol-d5, was slightly below method criteria in the sample extract as well as in the MS and MSD extracts of this sample.

4-Nitrophenol is not reported for this sample because the presence of a highly abundant tentatively identified compound (TIC), tributylphosphate, completely masked its response. The mass spectra of the TIC obscured the response of 4-nitrophenol so that no response was seen in the MS and MSD extracts of this sample.

Toluene-d8 failed the PORTS established Precision (%RPD range) between the method blank and the LCS. The value was 10.4%, while the upper range is 9.21%.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth:PORTS-OA97333006		QC Batch:QC98205003 Test:AB-ACT-GPC		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:07/21/98 00:00:00 J P BREWSTER		Approver: B W SHORT		07/27/98 10:21	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	1700		pCi/ml			0.3	
Beta activity	149.4		pCi/ml			0.9	

Analy Meth:PORTS-XP4-TS-RL7380		QC Batch:QC98204003 Test:TC99-ACT-LS		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:07/21/98 00:00:00 J P BREWSTER		Approver: B W SHORT		07/27/98 10:16	
Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	49.4		pCi/ml			5.5	

Analy Meth:PORTS-XP4-TS-RL7720ug		QC Batch:QC98212001 Test:TOTAL-U-AS		Rpt Basis:none		Date Approved	
Prep Meth:		Analyzed:07/28/98 00:00:00 R J ANDRE		Approver: B W SHORT		08/03/98 15:08	
ce Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	285	37	ug/ml				
Uranium-235	10	2.1	wt %				

Waste Stream Number: 705-7

Waste Stream Title: Ion Exchange Resin

Customer Smpl Id: VER47035001
' :X-04-WM BJC09825
Analyses:SOLID
ustomer:J A APPLGATE
COC#: 061035
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Matrix: SOLID
Protocol:RCRA
Status: APPROVED
Location:

Sampled: 08/12/98 00:00:00
Received: 08/12/98 13:30:19
Needed: 09/16/98 23:59:00
Approved: 09/15/98 16:42:55

Analy Meth:SW846-3050A	QC Batch:	Test:3050APREP	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:08/18/98 00:00:00 K A DAYS		Approver: D K PEREZ	09/15/98 15:30

Analy Meth:SW846-6010A	QC Batch:	Test:6010AMETALS5	Rpt Basis:none	Date Approved
Prep Meth: SW846-3050A	Analyzed:08/27/98 00:00:00 E L SIMPSON		Approver: D K PEREZ	09/04/98 15:41

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Aluminum	98.8		mg/kg	BN			1		
Antimony	4.0		mg/kg	*NU			1		
Arsenic	2.9		mg/kg	U			1		N
Barium	0.14		mg/kg	U			1		N
Beryllium	0.02		mg/kg	B			1		
Cadmium	0.23		mg/kg	U			1		N
Calcium	166		mg/kg	BN			1		
Chromium	1.2		mg/kg	U			1		N
	2.0		mg/kg	U			1		
	7.4		mg/kg	B			1		
Iron	28.6		mg/kg	BN			1		
Lead	2.9		mg/kg	U			1		N
Magnesium	13.4		mg/kg	B			1		
Manganese	0.73		mg/kg	B			1		
Molybdenum	0.55		mg/kg	BN			1		
Nickel	3.4		mg/kg	B			1		
Potassium	62.7		mg/kg	BJ			1		
Selenium	3.3		mg/kg	U			1		Y
Silver	1.7		mg/kg	B			1		N
Sodium	27400		mg/kg	J			1		
Thallium	3.9		mg/kg	NU			1		
Vanadium	0.26		mg/kg	U			1		
Zinc	23.6		mg/kg	B			1		

Comments: QC File: 98080676

Na and K qualified as estimate due to interference check not meeting acceptance limits. Si qualified as estimate due to calibration verification not meeting acceptance limits.

Method: SW846-8260A QC Batch: QC98232004 Test: VOA Rpt Basis: none Date Approved
P. Method: Analyzed: 08/19/98 00:00:00 J N STRICKLAND Approver: C J VANMETER 08/28/98

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	20		ug/kg	U	C	20	10		
1,1,2,2-Tetrachloroethane	20		ug/kg	U	C	20	10		
1,1,2-Trichloro-1,2,2-trifluoroethane	20		ug/kg	U	C	20	10		
1,1,2-Trichloroethane	20		ug/kg	U	C	20	10		
1,1-Dichloroethane	20		ug/kg	U	C	20	10		
1,1-Dichloroethene	20		ug/kg	U	C	20	10		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	40		ug/kg	JU	C	40	10		
1,2-Dichlorobenzene	20		ug/kg	U	C	20	10		
1,2-Dichloroethane	20		ug/kg	U	C	20	10		
1,2-Dimethylbenzene	20		ug/kg	U	C	20	10		
1,3 (1,4)-Dimethylbenzene	20		ug/kg	U	C	20	10		
1,3-Dichlorobenzene	20		ug/kg	U	C	20	10		
1,4-Dichlorobenzene	20		ug/kg	U	C	20	10		
2-Butanone	500		ug/kg	U	C	500	10		
4-Methyl-2-pentanone	500		ug/kg	U	C	500	10		
Acetone	500		ug/kg	U	C	500	10		
Benzene	20		ug/kg	U	C	20	10		
Bromodichloromethane	20		ug/kg	U	C	20	10		
Bromoform	20		ug/kg	U	C	20	10		
Bromomethane	40		ug/kg	JU	C	40	10		
Carbon disulfide	20		ug/kg	U	C	20	10		
Carbon tetrachloride	20		ug/kg	U	C	20	10		
Chlorobenzene	20		ug/kg	U	C	20	10		
Chloroethane	40		ug/kg	JU	C	40	10		
Chloroform	110		ug/kg		C	20	10		
Chloromethane	40		ug/kg	JU	C	40	10		
Dibromochloromethane	20		ug/kg	U	C	20	10		
Ethylbenzene	20		ug/kg	U	C	20	10		
Methylene chloride	20		ug/kg	U	C	20	10		
Tetrachloroethene	20		ug/kg	U	C	20	10		
Toluene	20		ug/kg	U	C	20	10		
Trichloroethene	20		ug/kg	U	C	20	10		
Trichlorofluoromethane	40		ug/kg	U	C	40	10		
Vinyl chloride	10		ug/kg	U	C	10	10		
cis-1,2-Dichloroethene	20		ug/kg	U	C	20	10		
trans-1,2-Dichloroethene	20		ug/kg	U	C	20	10		

Comments: The LCS (laboratory control solid) sample failed the established dibromofluoromethane surrogate recovery (110% -- upper limit=108%).

Freon-114, chloromethane, bromomethane, and chloroethane did not pass the daily continuing calibration and the values are estimated.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
a)pyrene	1900		ug/kg	U		1900	1		
b (b)fluoranthene	1900		ug/kg	U		1900	1		
Benzo(ghi)perylene	1900		ug/kg	JU		1900	1		
Benzo(k)fluoranthene	1900		ug/kg	U		1900	1		
Bis(2-chloroethoxy)methane	1900		ug/kg	U		1900	1		
Bis(2-chloroethyl) ether	1900		ug/kg	U		1900	1		
Bis(2-chloroisopropyl) ether	1900		ug/kg	U		1900	1		
Bis(2-ethylhexyl)phthalate	1900		ug/kg	U		1900	1		
Butylbenzylphthalate	1900		ug/kg	U		1900	1		
Chrysene	1900		ug/kg	U		1900	1		
Di-n-butylphthalate	1900		ug/kg	U		1900	1		
Di-n-octylphthlate	1900		ug/kg	U		1900	1		
Dibenz(a,h)anthracene	1900		ug/kg	JU		1900	1		
Diethylphthalate	1900		ug/kg	U		1900	1		
Dimethylphthalate	1900		ug/kg	U		1900	1		
Diphenyldiazene	1900		ug/kg	U		1900	1		
Fluoranthene	1900		ug/kg	U		1900	1		
Fluorene	1900		ug/kg	U		1900	1		
Hexachlorobenzene	1900		ug/kg	U		1900	1		
Hexachlorobutadiene	1900		ug/kg	U		1900	1		
Hexachlorocyclopentadiene	1900		ug/kg	JU		1900	1		
Hexachloroethane	1900		ug/kg	U		1900	1		
Indeno(1,2,3-cd)pyrene	1900		ug/kg	JU		1900	1		
Isophorone	1900		ug/kg	U		1900	1		
N-Nitroso-di-n-propylamine	1900		ug/kg	U		1900	1		
rosodimethylamine	1900		ug/kg	U		1900	1		
rosodiphenylamine	1900		ug/kg	U		1900	1		
Naphthalene	1900		ug/kg	U		1900	1		
Nitrobenzene	1900		ug/kg	U		1900	1		
Pentachlorophenol	9500		ug/kg	U		9500	1		
Phenanthrene	1900		ug/kg	U		1900	1		
Phenol	1900		ug/kg	U		1900	1		
Pyrene	1900		ug/kg	U		1900	1		
Pyridine	1900		ug/kg	U		1900	1		

Comments: 2,4-Dinitrophenol (23%) and hexachlorocyclopentadiene (22%) both failed established criteria for initial calibration %RSD of <15%, and both are qualified as estimates, 'J'.

The last internal perylene-d12 area recovery in the MS extract of this sample was >100% and failed established criteria. However the area did meet criteria in the 3x dilution of this sample.

Hexachlorocyclopentadiene recoveries in the MS extract and in a 3x dilution of the MS extract were below established criteria; therefore, this compound is also qualified as an estimate.

Analyte Meth: SW846-7470A	QC Batch:	Test: HG7470A	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 08/20/98 00:00:00 C J MAYNARD		Approver: D K PEREZ	09/02/98

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Mercury	2.92		mg/kg			0.024	40		Y

Comments: QC File: 98080628

EPA Qualifiers:

- * - Duplicate analysis not within control limits.
- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Analy Meth: SW846-3540	QC Batch: QC98252009	Test: ORGEXT-SVOC	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 08/13/98 00:00:00 D K SCAGGS		Approver: C J VANMETER	09/11/98 14:34

Analy Meth: SW846-8270B	QC Batch: QC98254000	Test: SVOC	Rpt Basis: none	Date Approved
Prep Meth: SW846-3540	Analyzed: 09/08/98 00:00:00 R J WAWRO		Approver: C J VANMETER	09/11/98 14:37

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
-Trichlorobenzene	1900		ug/kg	U		1900	1		
1,2-Dichlorobenzene	1900		ug/kg	U		1900	1		
1,3-Dichlorobenzene	1900		ug/kg	U		1900	1		
1,4-Dichlorobenzene	1900		ug/kg	U		1900	1		
2,4,5-Trichlorophenol	1900		ug/kg	U		1900	1		
2,4,6-Trichlorophenol	1900		ug/kg	U		1900	1		
2,4-Dichlorophenol	1900		ug/kg	U		1900	1		
2,4-Dimethylphenol	1900		ug/kg	U		1900	1		
2,4-Dinitrophenol	9500		ug/kg	JU		9500	1		
2,4-Dinitrotoluene	1900		ug/kg	U		1900	1		
2,6-Dinitrotoluene	1900		ug/kg	U		1900	1		
2-Chloronaphthalene	1900		ug/kg	U		1900	1		
2-Chlorophenol	1900		ug/kg	U		1900	1		
2-Methyl-4,6-dinitrophenol	9500		ug/kg	U		9500	1		
2-Methylphenol	1900		ug/kg	U		1900	1		
2-Nitrophenol	1900		ug/kg	U		1900	1		
3(4)-Methylphenol	1900		ug/kg	U		1900	1		
4-Bromophenyl phenyl ether	1900		ug/kg	U		1900	1		
4-Chloro-3-methylphenol	3800		ug/kg	U		3800	1		
4-Chlorophenylphenyl ether	1900		ug/kg	U		1900	1		
4-Nitrophenol	9500		ug/kg	U		9500	1		
Acenaphthene	1900		ug/kg	U		1900	1		
Acenaphthylene	1900		ug/kg	U		1900	1		
Anthracene	1900		ug/kg	U		1900	1		
10(a)anthracene	1900		ug/kg	U		1900	1		

Analyte Name	eth:PORTS-XP4-TS-RL7280	QC Batch:QC98229000 Test:AB-ACT-GPC	Rpt Basis:none	Date Approved
Prep Meth:		Analyzed:08/14/98 00:00:00 J P BREWSTER	Approver: B W SHORT	08/17/98 15:09

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Alpha activity	159		pCi/g			4	
Beta activity	33067		pCi/g	J		12	

Analyte Name	Analys Meth:PORTS-XP4-TS-RL7385	QC Batch:QC98229001 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:		Analyzed:08/15/98 00:00:00 J P BREWSTER	Approver: B W SHORT	08/17/98 15:07

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	8105		pCi/g			14.3	

Analyte Name	Analys Meth:PORTS-XP4-TS-RL7710ug	QC Batch:QC98233015 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:		Analyzed:08/17/98 00:00:00 S J JAMES	Approver: B W SHORT	08/21/98 15:30

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	0.70	0.33	ug/g			0.5	
Uranium-235	NA		wt %				

EPA Qualifiers:

J - Indicates an estimated value.

Footnotes:

C - Method SW846-5030A "Purge-and-Trap"

***** END OF REPORT *****

MARTIN MARIETTA ENERGY SYSTEMS
P.O. BOX 628
PIKETON, OHIO
45661

Corrosion Testing

Received: TSR#15614 Date: 2/27/91

Sample ID: WMS-599; RFD-1728-1; RFD-2174-1

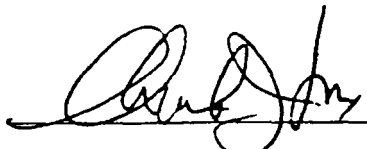
Analysis Date: 3/6; 3/14; 3/18

Procedure: NACE Std TM-01-69

Notebook Code: #6046-132/33

Sample Results: Corrosion Rate, (mm/yr)

	Sample Vapor	Interface	Immersed
1' Resin WMS-599	(a) <u>0.018</u>	(b) <u>0.016</u>	(c) <u>0.007</u>
RFD-1728-1	(a) <u>0.534</u>	(b) <u>0.537</u>	(c) <u>0.579</u>
RFD-2174-1	(a) <u>0.638</u>	(b) <u>1.88</u>	(c) <u>0.746</u>



Charles J. Lux

Waste Stream Number: 705-8

Waste Stream Title: Mercury Waste

105-8

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OFFICIAL REPORT

SAMPLE E942280079

Y-12 ANALYTICAL SERVICES ORGANIZATION

PAGE 3 OF 3

12672296	PCB1248	<10	ug/L
11097691	PCB1254	<10	ug/L
11096825	PCB1260	<10	ug/L
	PCB	NA	ug/L

TEST: PCB_UG	PCB IN SOLID WASTE	REPLICATE: 1	STATUS: CANCELLED
PREP MTH:	PROC MTH:	TIME ANALYZED:	APPROVER:
THIS TEST WAS CANCELLED			

TEST: TC99_W	Analysis of Technetium 99 in water	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: Y/P65-7154	TIME ANALYZED: 08/25/94 00:00:00	APPROVER: E019888
COMMENTS: MDA = 0.134 PC1/ML			

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
	Technetium-99		745	+/- 1.9	pC/mL

TEST: TOTAL_U	Total U by Isotopic dilution	REPLICATE: 1	STATUS: APPROVED
PREP MTH:	PROC MTH: Y/P65-8044	TIME ANALYZED:	APPROVER: E013506
COMMENTS: DUPLICATE ANALYSIS: TOTAL U: 1.5 PPM; WT % 235U: 5.8 +/- .2			

CAS NUMBER	DETERMINATION	DT	RESULT	CONFIDENCE	UNIT
7440611	Uranium		1.4		ug/g
15'	Uranium-235		6.0	+/- .2	Weight %

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*** LAST PAGE ***

Waste Stream Number: 705-9

Waste Stream Title: Bag Filters

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

AnalIS ID: 920310-043 Project: WMGT RFD Customer Sample ID: RFD-8444
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 10-MAR-1992 Date Sample Received: 10-MAR-1992
Sampled By: B KELLEY Date Sample Completed: 27-OCT-1992
Material Description: RECOVERY MATERIAL

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	Arsenic	2.7		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Barium	0.29		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Cadmium	1.4		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Chromium	0.75		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Lead	< 0.03		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Mercury	0.98		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Selenium	2.1		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
	Silver	8.3		mg/L	MR KELLEY	31-MAR-1992	RFD-8444
TSD553-340	Technetium (Waste)	51059		pCi/g	JJ SISLER	24-MAR-1992	92070192
TSD	Assay (% U-235, Waste)	5.38		% U-235	JD LITTERAL	25-MAR-1992	92070316
	Total Uranium	287.1		ppm U	JD LITTERAL	25-MAR-1992	92070316

***** Comments from the Chemical Technology Department *****

Cadmium exceeded the regulatory limit of 1.0 mg/L.

Mercury exceeded the regulatory limit of 0.2 mg/L.

Selenium exceeded the regulatory limit of 1.0 mg/L.

Silver exceeded the regulatory limit of 5.0 mg/L.

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

ify data for the sample as estimated.

- duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.
R - reported value is unusable. The value is for informational purposes only.
 reported value was obtained by the Method of Standard Additions (MSA).
UJ - qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.
- + - Correlation coefficient for MSA is less than 0.995.
- # - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
NR - Not reported.
NA - Not analyzed.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

nager: Wayne J. Spetnagel (Radiochemistry Laboratory)
A. J. Saraceno (Chemical Technology Department)

Date Approved: 30-OCT-1992

Waste Stream Number: 705-10

Waste Stream Title: Incinerator Ash

Waste Stream 705-10

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 951025-012 Project: ER 9567E Requisition Number: 018836
 Customer Sample ID: VER35353001 Customer: ENV RETORATION
 Date Sampled: 17-OCT-1995 13:00 Date Sample Received: 18-OCT-1995
 Sampled By: MB HAMEL Date Sample Completed: 11-JAN-1996
 Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			MR KELLEY	3-NOV-1995	110395-010
1311/3520	Sample Prep TCLP Semi-Volatile	COMPLETE			DG OPALINSKI	2-NOV-1995	95160322
ACD-5101	Density	0.76		g/mL	ML STEWART	19-OCT-1995	95081105
ASTM-D2216	Moisture	1.0		%	ML STEWART	19-OCT-1995	95081104
SW-846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	31-OCT-1995	95170230
SW846-1311	Sample Prep TCLP	COMPLETE			MR KELLEY	31-OCT-1995	95170230
SW	Sample Prep Metals	COMPLETE			ML STEWART	23-OCT-1995	102395-066
340-3540	Sample Prep PCB	COMPLETE			DH BLUE	31-OCT-1995	95160327
SW846-6010A	Aluminum	540		mg/kg	RL POLK	23-OCT-1995	95R81167
	Antimony	3.6U		mg/kg	RL POLK	23-OCT-1995	95R81167
	Arsenic	5.5U		mg/kg	RL POLK	23-OCT-1995	95R81167
	Barium	25.3		mg/kg	RL POLK	23-OCT-1995	95R81167
	Beryllium	0.090U		mg/kg	RL POLK	23-OCT-1995	95R81167
	Cadmium	29.4N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Calcium	391		mg/kg	RL POLK	23-OCT-1995	95R81167
	Chromium	1.9		mg/kg	RL POLK	23-OCT-1995	95R81167
	Cobalt	1.7		mg/kg	RL POLK	23-OCT-1995	95R81167
	Copper	19.4N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Iron	298		mg/kg	RL POLK	23-OCT-1995	95R81167
	Lead	67.9N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Magnesium	70.0N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Manganese	6.2		mg/kg	RL POLK	23-OCT-1995	95R81167
	Molybdenum	0.98U		mg/kg	RL POLK	23-OCT-1995	95R81167
	Nickel	6.3N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Potassium	210N		mg/kg	RL POLK	23-OCT-1995	95R81167
	Selenium	7.4U		mg/kg	RL POLK	23-OCT-1995	95R81167
	Silver	0.48		mg/kg	RL POLK	23-OCT-1995	95R81167
	Sodium	346		mg/kg	RL POLK	23-OCT-1995	95R81167
	Thallium	8.6UJ		mg/kg	RL POLK	23-OCT-1995	95R81167
	Titanium	NR		mg/kg	RL POLK	23-OCT-1995	95R81167
	Vanadium	2.2		mg/kg	RL POLK	23-OCT-1995	95R81167
	Zinc	709		mg/kg	RL POLK	23-OCT-1995	95R81167

SW846-8080	PCB-1232	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	PCB-1242	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	PCB-1248	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	PCB-1254	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	PCB-1260	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	PCB-1268	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
	Total PCB	<.5	ug/g	DH BLUE	2-DEC-1995	95161201M1
SW846-9010A	Total Cyanide	0.3U	mg/kg	SL LEMASTER	30-OCT-1995	95101513
SW846-9020A	TOX	< 10.0	ug/g	DE COLLINS	10-NOV-1995	95161110T3
SW846-9030A	Sulfide	16,564J	mg/kg	SL LEMASTER	30-OCT-1995	95101570
SW846-9045	pH	6.07		AR CLAUSING	24-OCT-1995	95101491
SW846-9095	Paint Filter Test	PASS		LD DRYDEN	30-OCT-1995	95170228
TSD553-240	Gross Alpha	3178	pCi/G	JP BREWSTER	3-NOV-1995	95071648
	Gross Beta	680	pCi/G	JP BREWSTER	3-NOV-1995	95071648
TSD553-340	Technetium	72.1	pCi/g	JP BREWSTER	4-NOV-1995	95071657
TSD553-440	Cesium-134	<0.7	pCi/g	WC ZUEFLE	31-OCT-1995	95071631
	Cesium-137	0.9	pCi/g	WC ZUEFLE	31-OCT-1995	95071631
	Cobalt-60	<0.7		WC ZUEFLE	31-OCT-1995	95071631
	Gross Gamma	260	pCi/g	WC ZUEFLE	31-OCT-1995	95071631
TSD553-710	% U-235	7.5	1.4 %	CD GOOD	3-NOV-1995	95071647
	Alpha Activity	829	92 pCi/g	CD GOOD	3-NOV-1995	95071647
	Americium-241	<0.04	pCi/g	CD GOOD	3-NOV-1995	95071647
	Neptunium-237	0.15	0.096 pCi/g	CD GOOD	3-NOV-1995	95071647
	Plutonium-238	<0.091	pCi/g	CD GOOD	3-NOV-1995	95071647
	Plutonium-239/240	<0.12	pCi/g	CD GOOD	3-NOV-1995	95071647
	Protactinium-234	<0.10	pCi/g	CD GOOD	3-NOV-1995	95071647
	Thorium-228	<0.37	pCi/g	CD GOOD	3-NOV-1995	95071647
	Thorium-230	3.1	0.62 pCi/g	CD GOOD	3-NOV-1995	95071647
	Thorium-232	<0.15	pCi/g	CD GOOD	3-NOV-1995	95071647
	Thorium-234	73	9.6 pCi/g	CD GOOD	3-NOV-1995	95071647
	Uranium	235	29 ug/g	CD GOOD	3-NOV-1995	95071647

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Antimony	50	47.49	94.98
Arsenic	50	51.43	102.86
Barium	50	40.34	80.68
Beryllium	50	46.90	93.80
Cadmium	50	141.02	282.04
Chromium	50	50.99	101.98
Cobalt	50	51.51	103.02
Copper	50	95.84	191.68

ANALYSIS DATA REPORT

ANALIS ID: 951025-012
 Laboratory: TCLP Laboratory
 File ID: 95170230
 Instrument ID:
 Authorized By: C. J. Van Meter

Customer Sample ID: VER35353001
 Customer: ENV RETORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 018836
 Date Sample Received: 18-OCT-1995
 Date Sampled: 17-OCT-1995

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 31-OCT-1995
 Analysis Procedure Number: 1311/6010A
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 3-NOV-1995
 QA File Number: 95081355
 Dilution Factor: 1.0
 Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.560U			
7440-39-3	Barium	0.435			
7440-43-9	Cadmium	0.088			
7440-47-3	Chromium	0.022U			
7439-92-1	Lead	0.223JU			
7782-49-2	Selenium	0.755JU			

ANALYSIS DATA REPORT

ANALIS ID: 951025-012
 Laboratory: TCLP Laboratory
 File ID: 95170230
 Instrument ID:
 Authorized By: C. J. Van Meter

Customer Sample ID: VER35353001
 Customer: ENV RETORATION
 Sample Matrix: SOLID WASTE
 Requisition Number: 018836
 Date Sample Received: 18-OCT-1995
 Date Sampled: 17-OCT-1995

TCLP_HG_RPT

Date Extracted/Prepared: 31-OCT-1995
 Analysis Procedure Number: 1311/7470
 Percent Moisture:
 Percent Moisture (decanted):
 Associated Blank:

Date Analyzed: 7-NOV-1995
 QA File Number: 95081176
 Dilution Factor: 1.0
 Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.010U		

ANALYSIS DATA REPORT

AnalIS ID: 951025-012
Laboratory: TCLP Laboratory
File ID: 95170230
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER35353001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 018836
Date Sample Received: 18-OCT-1995
Date Sampled: 17-OCT-1995

TCLP_AG_RPT

Date Extracted/Prepared: 31-OCT-1995
Analysis Procedure Number: 1311/7760A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 9-NOV-1995
QA File Number: 95081187
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS	mg/L	CAS	mg/L
7440-22-4 silver	0.160		

Refractory Material

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

Analysis ID: 960930-099 Project: ER 9567D Customer Sample ID: VER36558010
Customer: ENV RESTORATION Requisition Number: 22861
Date Sampled: 27-SEP-1996 10:00 Date Sample Received: 30-SEP-1996
Sampled By: M MCROBERTS Date Sample Completed: 4-NOV-1996

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
W846-3050A	Sample Prep Metals	COMPLETE			RK POWELL	8-OCT-1996	100896-019
W846-3540	Sample Prep PCB	COMPLETE			SL EWING	8-OCT-1996	96160295
W846-6010A	Aluminum	20800B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Antimony	59.18N		MG/KG	KA DAYS	8-OCT-1996	96080892
	Arsenic	23.4U		MG/KG	KA DAYS	8-OCT-1996	96080892
	Barium	560B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Beryllium	2.0B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Bismuth	NR		mf/kf	KA DAYS	8-OCT-1996	96080892
	Cadmium	24.8B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Calcium	116000N		MG/KG	KA DAYS	8-OCT-1996	96080892
	Chromium	436B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Cobalt	19.5B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Copper	125B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Iron	54000BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Lead	534B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Magnesium	18200BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Manganese	2160BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Nickel	335B*		MG/KG	KA DAYS	8-OCT-1996	96080892
	Selenium	35.9U		MG/KG	KA DAYS	8-OCT-1996	96080892
	Silver	10.0BJ		MG/KG	KA DAYS	8-OCT-1996	96080892
	Sodium	860B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Thallium	28.2BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Tin	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Titanium	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Vanadium	33.5B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Zinc	731B		MG/KG	KA DAYS	8-OCT-1996	96080892
846-8080	PCB-1232	< 0.5		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	PCB-1242	< 0.5		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	PCB-1248	< 0.5		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	PCB-1254	2.7		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	PCB-1260	< 0.5		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	PCB-1268	< 0.5		ug/g	DH BLUE	19-OCT-1996	96161017M5R
	Total PCB	2.7		ug/g	DH BLUE	19-OCT-1996	96161017M5R
555	Gross Alpha	5544		pCi/g	JP BREWSTER	18-OCT-1996	96071432
	Gross Beta	1500		pCi/g	JP BREWSTER	18-OCT-1996	96071432

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 960930-098 Project: ER 9567D Customer Sample ID: VER36558005
Customer: ENV RESTORATION Requisition Number: 22861
Date Sampled: 27-SEP-1996 09:15 Date Sample Received: 30-SEP-1996
Sampled By: M MCROBERTS Date Sample Completed: 4-NOV-1996

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-3050A	Sample Prep Metals	COMPLETE			RK POWELL	8-OCT-1996	100896-019
SW846-3540	Sample Prep PCB	COMPLETE			SL EWING	8-OCT-1996	96160295
SW846-6010A	Aluminum	19700B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Antimony	117BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Arsenic	26.5B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Barium	533B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Beryllium	1.1B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Bismuth	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Cadmium	37.6B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Calcium	85500N		MG/KG	KA DAYS	8-OCT-1996	96080892
	Chromium	625B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Cobalt	24.1B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Copper	148B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Iron	57700BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Lead	791		MG/KG	KA DAYS	8-OCT-1996	96080892
	Magnesium	15700BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Manganese	675BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Nickel	413B*		MG/KG	KA DAYS	8-OCT-1996	96080892
	Selenium	35.5U		MG/KG	KA DAYS	8-OCT-1996	96080892
	Silver	12.2BJ		MG/KG	KA DAYS	8-OCT-1996	96080892
	Sodium	981B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Thallium	24.8BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Tin	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Titanium	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Vanadium	37.5B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Zinc	989B		MG/KG	KA DAYS	8-OCT-1996	96080892
846-8080	PCB-1232	< 1		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	PCB-1242	< 1		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	PCB-1248	< 1		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	PCB-1254	2.9		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	PCB-1260	< 1		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	PCB-1268	< 1		ug/g	DH BLUE	21-OCT-1996	96161017M5R
	Total PCB	2.9		ug/g	DH BLUE	21-OCT-1996	96161017M5R
553-280	Gross Alpha	8102		pCi/g	JP BREWSTER	10-OCT-1996	96071398
	Gross Beta	2291		pCi/g	JP BREWSTER	10-OCT-1996	96071398

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

ANALIS ID: 960930-103 Project: ER 9567D Customer Sample ID: VER36558007
 Customer: ENV RESTORATION Requisition Number: 22863
 Date Sampled: 27-SEP-1996 10:10 Date Sample Received: 30-SEP-1996
 Sampled By: M MCROBERTS Date Sample Completed: 4-NOV-1996

Material Description:

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Spec. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
46-3050A	Sample Prep Metals	COMPLETE			RK POWELL	8-OCT-1996	100896-019
46-3540	Sample Prep PCB	COMPLETE			SL EWING	8-OCT-1996	96160295
46-3540B	Sample Prep Semi-Volatiles	COMPLETE			DK SCAGGS	10-OCT-1996	96160315
46-6010A	Aluminum	19200B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Antimony	76.48N		MG/KG	KA DAYS	8-OCT-1996	96080892
	Arsenic	28.3B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Barium	514B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Beryllium	1.1U		MG/KG	KA DAYS	8-OCT-1996	96080892
	Bismuth	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Cadmium	34.0B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Ceium	92400N		MG/KG	KA DAYS	8-OCT-1996	96080892
	Cromium	927		MG/KG	KA DAYS	8-OCT-1996	96080892
	Cobalt	23.1B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Copper	134B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Iron	62300BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Lead	532B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Magnesium	17300BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Manganese	829BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Nickel	383B*		MG/KG	KA DAYS	8-OCT-1996	96080892
	Selenium	35.5U		MG/KG	KA DAYS	8-OCT-1996	96080892
	Silver	12.2BJ		MG/KG	KA DAYS	8-OCT-1996	96080892
	Sodium	853B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Thallium	40.9BN		MG/KG	KA DAYS	8-OCT-1996	96080892
	Tin	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Titanium	NR		mg/kg	KA DAYS	8-OCT-1996	96080892
	Vanadium	42.0B		MG/KG	KA DAYS	8-OCT-1996	96080892
	Zinc	851B		MG/KG	KA DAYS	8-OCT-1996	96080892
5-8080	PCB-1232	< 0.5		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	PCB-1242	< 0.5		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	PCB-1248	< 0.5		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	PCB-1254	2.3		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	PCB-1260	< 0.5		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	PCB-1268	< 0.5		ug/g	DN BLUE	19-OCT-1996	96161017M5R
	Total PCB	2.3		ug/g	DN BLUE	19-OCT-1996	96161017M5R
3-280	Uss Alpha	J 8576		pCi/g	JP BREWSTER	18-OCT-1996	96071432

Waste Stream Number: 705-11

Waste Stream Title: Filter Table Gunk

WSID - 705-11

Portsmouth Gaseous Diffusion Plant
Technical Services Division
Analysis Results

ANALIS ID: 920129-040 Project: WMG T WMS Customer Sample ID: WMS-720
Customer: WASTE MANAGEMENT Requisition Number:
Date Sampled: 24-JAN-1992 Date Sample Received: 24-JAN-1992
Sampled By: AR SELBEE Date Sample Completed: 22-JAN-1993
Material Description: GUNK *from X702 Hand table*

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311	1,1-Dichloroethene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	1,2-Dichloroethane	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	1,4-Dichlorobenzene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Arsenic	0.17		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Barium	0.49		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Benzene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Cadmium	0.04		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Carbon Tetrachloride	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Chlorobenzene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Chloroform	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Chromium	0.14		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Lead	< 0.01		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Mercury	0.26		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Methy ethyl ketone	< 0.17X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Selenium	0.09		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Silver	0.19		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Tetrachloroethene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Trichloroethene	< 0.002X		mg/L	MR KELLEY	29-JAN-1992	WMS-720
	Vinyl Chloride	< 0.004X		mg/L	MR KELLEY	29-JAN-1992	WMS-720

***** Comments from the TCLP Laboratory *****

Method 1311 - X- The values for volatile organics are for informational purposes only and corrected for matrix spike recovery.
The analyses were performed after the holding time expired.

Mercury exceeded the regulatory limit of 0.2 mg/L. The result was not corrected for matrix spike recovery.

TCLP_SV_ACIDS_RPT - Data corrected for matrix spike recovery.
Recovery of the semivolatile [acids] surrogate compounds did not meet QC requirements.

TCLP_SV_B/N_RPT - Data corrected for matrix spike recovery.

ly identified compounds were also found.

nic compounds and concentration values can be found in POEF-554-
November 24, 1992.

Inorganic Data Reporting Qualifiers and Flags:

Injection Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - + - Correlation coefficient for MSA is less than 0.995.
 - # - The value is between the LC and the LLD.
- Flag "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Laboratory Manager: J.J. Williams (TCLP Laboratory)

Date Approved: 22-JAN-1993

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920129-040
Laboratory: TCLP Laboratory
File ID: WMS-720
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: WMS-720
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 24-JAN-1992
Date Sampled: 24-JAN-1992

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 29-JAN-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-720
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.063U			
108-39-4	m-Cresol	0.028U			
106-44-5	4-Methylphenol	0.063U			
87-86-5	Pentachlorophenol	0.020U			
95-95-4	2,4,5-Trichlorophenol	0.020U			
88-06-2	2,4,6-Trichlorophenol	0.020U			

Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

ANALYSIS DATA REPORT

Page 1 of 1

AnalIS ID: 920129-040
Laboratory: TCLP Laboratory
File ID: WMS-720
Instrument ID:
Authorized By: J.J. Williams

Customer Sample ID: WMS-720
Customer: WASTE MANAGEMENT
Sample Matrix: WASTE
Requisition Number:
Date Sample Received: 24-JAN-1992
Date Sampled: 24-JAN-1992

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 29-JAN-1992
Analysis Procedure Number: 1311
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed:
QA File Number: WMS-720
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.026U			
118-74-1	Hexachlorobenzene	0.020U			
87-68-3	Hexachlorobutadiene	0.020U			
67-72-1	Hexachloroethane	0.022U			
98-95-3	Nitrobenzene	0.021U			
110-86-1	Pyridine	0.027U			

Data Reporting Qualifiers:

- Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.

Waste Stream Number: 705-12

Waste Stream Title: Laboratory Waste

Inner Smpl Id: VER46290001
 t:X-04-WM BJC09825
 Sample Analyses: LIQUID
 Customer: J A APLEGATE
 COC#: 54815
 Sample Desc:
 Customer Comments:
 Lab Smpl Comments:

Matrix: LIQUID
 Protocol: RCRA
 Status: APPROVED
 Location:

Sampled: 04/03/98 13:20:00
 Received: 04/06/98 08:40:50
 Needed: 05/11/98 00:00:00
 Approved: 05/11/98 16:38:24

705-12

Analy Meth: SW846-3015	QC Batch:	Test: 3015PREP	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 04/24/98 00:00:00	K A DAYS	Approver: D K PEREZ	05/02/98 13:12

Analy Meth: SW846-6010A	QC Batch:	Test: 6010AMETALS2	Rpt Basis: none	Date Approved
Prep Meth: SW846-3015	Analyzed: 05/03/98 00:00:00	E L SIMPSON	Approver: D K PEREZ	05/11/98 14:01

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Arsenic	234		ug/L	JU			10		
Barium	55.5		ug/L	B			10		
Cadmium	76.8		ug/L	B			10		
Chromium	7050		ug/L				10		
Lead	178		ug/L	JNU			10		
Selenium	359		ug/L	NU			10		
Silver	106		ug/L	BN			10		

Comments: QC File: 98080358

As qualified as estimate due to interference check not meeting acceptance limits. Pb qualified as estimate due to lab control reading greater than acceptance limits.

Analy Meth: SW846-1010	QC Batch:	Test: FLASHPOINT	Rpt Basis: none	Date Approved
Prep Meth:	Analyzed: 04/16/98 00:00:00	M L STEWART	Approver: D K PEREZ	04/21/98 16:03

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
Flash Point Closed Cup	26.0		deg C				1		

Comments: QC File: 981100013

EPA Qualifiers:

- B - Analyte result less than the Practical Quantitation Limit (PQL) and greater than or equal to the Instrument Detection Limit (IDL).
- J - Qualify data for the sample as estimated.
- N - Sample spike recovery not within control limits.
- U - Analyte analyzed for but undetected. Analyte result was below the Instrument Detection Limit (IDL).

Meth: SW846-3520	QC Batch: QC98127002 Test: ORGEXT-SVOC	Rpt Basis: none	Date Appr
Prep Meth:	Analyzed: 04/15/98 00:00:00 D K SCAGGS	Approver: C J VANMETER	05/08/98 1

Analy Meth: SW846-8270B	QC Batch: QC98131002 Test: SVOC	Rpt Basis: none	Date Approved
Prep Meth: SW846-3520	Analyzed: 05/05/98 00:00:00 R J WAWRO	Approver: C J VANMETER	05/11/98 16:36

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,2,4-Trichlorobenzene	500		ug/L	U		500	5	P	
1,2-Dichlorobenzene	500		ug/L	U		500	5	P	
1,3-Dichlorobenzene	500		ug/L	U		500	5	P	
1,4-Dichlorobenzene	500		ug/L	U		500	5	P	
2,4,5-Trichlorophenol	500		ug/L	U		500	5	P	
2,4,6-Trichlorophenol	500		ug/L	U		500	5	P	
2,4-Dichlorophenol	500		ug/L	U		500	5	P	
2,4-Dimethylphenol	500		ug/L	U		500	5	P	
2,4-Dinitrophenol	2500		ug/L	JU		2500	5	P	
2,4-Dinitrotoluene	500		ug/L	U		500	5	P	
2,6-Dinitrotoluene	500		ug/L	U		500	5	P	
2-Chloronaphthalene	500		ug/L	U		500	5	P	
2-Chlorophenol	500		ug/L	U		500	5	P	
2-Methyl-4,6-dinitrophenol	2500		ug/L	JU		2500	5	P	
2-Methylphenol	500		ug/L	U		500	5	P	
2-Nitrophenol	500		ug/L	U		500	5	P	
Methylphenol	500		ug/L	U		500	5	P	
mophenyl phenyl ether	500		ug/L	U		500	5	P	
4-Chloro-3-methylphenol	1000		ug/L	U		1000	5	P	
4-Chlorophenylphenyl ether	500		ug/L	U		500	5	P	
4-Nitrophenol	2500		ug/L	U		2500	5	P	
Acenaphthene	500		ug/L	U		500	5	P	
Acenaphthylene	500		ug/L	U		500	5	P	
Anthracene	500		ug/L	U		500	5	P	
Benzo(a)anthracene	500		ug/L	U		500	5	P	
Benzo(a)pyrene	500		ug/L	U		500	5	P	
Benzo(b)fluoranthene	500		ug/L	U		500	5	P	
Benzo(ghi)perylene	500		ug/L	JU		500	5	P	
Benzo(k)fluoranthene	500		ug/L	U		500	5	P	
Bis(2-chloroethoxy)methane	500		ug/L	U		500	5	P	
Bis(2-chloroethyl) ether	500		ug/L	U		500	5	P	
Bis(2-chloroisopropyl) ether	500		ug/L	U		500	5	P	
Bis(2-ethylhexyl)phthalate	1500		ug/L			500	5	P	
Butylbenzylphthalate	500		ug/L	U		500	5	P	
Chrysene	500		ug/L	U		500	5	P	
Di-n-butylphthalate	500		ug/L	U		500	5	P	
Di-n-octylphthlate	500		ug/L	U		500	5	P	
Dibenz(a,h)anthracene	500		ug/L	JU		500	5	P	
Diethylphthalate	500		ug/L	U		500	5	P	
Dimethylphthalate	500		ug/L	U		500	5	P	
Diphenyldiazene	500		ug/L	U		500	5	P	
Fluoranthene	500		ug/L	U		500	5	P	

VER46290001

Portsmouth Analytical Laboratory
Official Report

X981030009

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
ene	500		ug/L	U		500	5	P	
hexachlorobenzene	500		ug/L	U		500	5	P	
Hexachlorobutadiene	500		ug/L	U		500	5	P	
Hexachlorocyclopentadiene	NR		ug/L				5	P	
Hexachloroethane	500		ug/L	U		500	5	P	
Indeno(1,2,3-cd)pyrene	500		ug/L	JU		500	5	P	
Isophorone	500		ug/L	U		500	5	P	
N-Nitroso-di-n-propylamine	500		ug/L	U		500	5	P	
N-Nitrosodimethylamine	500		ug/L	U		500	5	P	
N-Nitrosodiphenylamine	500		ug/L	U		500	5	P	
Naphthalene	500		ug/L	U		500	5	P	
Nitrobenzene	500		ug/L	U		500	5	P	
Pentachlorophenol	2500		ug/L	U		2500	5	P	
Phenanthrene	500		ug/L	U		500	5	P	
Phenol	500		ug/L	U		500	5	P	
Pyrene	500		ug/L	U		500	5	P	
Pyridine	500		ug/L	U		500	5	P	

Comments: The results are from a 5x dilution of the extract concentrate of this sample. The undiluted extract injection on 05/05/98 exhibited several QC problems. The first surrogate recovery, 2-fluorophenol, was below method criteria as were several matrix spike acid compounds in the MS extract. The only QC problem not rectified in the diluted reinjection was the low recovery of 4,6-dinitro-2-methylphenol. The result for this compound is therefore qualified as an estimate, 'J'. These problems appear to be the result of several large TICs that coelute with these target compounds. The 2 largest TICs were tributyl phosphate and trimethyl citrate.

There were 3 compounds that exceeded the 15% RSD criteria for the initial calibration and are qualified as estimated values, 'J'. These compounds were: 2,4-dinitrophenol(32.7%), 4,6-dinitro-2-methylphenol(17.4%), and hexachlorocyclopentadiene(22.1%).

Three compounds exceeded %RSD (30%) criteria for the continuing calibration check and are also qualified with a 'J'. These compounds are indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene.

Hexachlorocyclopentadiene is not reported (NR) because of continuing difficulties in the liquid/liquid extraction procedure for this compound. Recoveries of hexachlorocyclopentadiene from laboratory control and matrix spiked samples have historically been very poor.

Analyt Meth:SW846-8260A

QC Batch:QC98112016 Test:VOA

Rpt Basis:none

Date Approved

Prep Meth:

Analyzed:04/16/98 00:00:00 D E COLLINS

Approver: C J VANMETER

04/30/98 15:36

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	200000		ug/L	U		200000	100000		
1,1,2,2-Tetrachloroethane	200000		ug/L	U		200000	100000		
1,1,2-Trichloro-1,2,2-trifluoroethane	200000		ug/L	U		200000	100000		

Official Report

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	CLF
1,1,1-Trichloroethane	200000		ug/L	U		200000	100000		
1,1-Dichloroethane	200000		ug/L	U		200000	100000		
1,1-Dichloroethene	200000		ug/L	U		200000	100000		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	400000		ug/L	U		400000	100000		
1,2-Dichlorobenzene	200000		ug/L	U		200000	100000		
1,2-Dichloroethane	200000		ug/L	U		200000	100000		
1,2-Dimethylbenzene	200000		ug/L	U		200000	100000		
1,3 (1,4)-Dimethylbenzene	200000		ug/L	U		200000	100000		
1,3-Dichlorobenzene	200000		ug/L	U		200000	100000		
1,4-Dichlorobenzene	200000		ug/L	U		200000	100000		
2-Butanone	5000000		ug/L	U		5000000	100000		
4-Methyl-2-pentanone	5000000		ug/L	U		5000000	100000		
Acetone	5000000		ug/L	U		5000000	100000		
Benzene	200000		ug/L	U		200000	100000		
Bromodichloromethane	200000		ug/L	U		200000	100000		
Bromoform	200000		ug/L	U		200000	100000		
Bromomethane	400000		ug/L	U		400000	100000		
Carbon disulfide	200000		ug/L	U		200000	100000		
Carbon tetrachloride	200000		ug/L	U		200000	100000		
Chlorobenzene	200000		ug/L	U		200000	100000		
Chloroethane	400000		ug/L	U		400000	100000		
Chloroform	3800000		ug/L			200000	100000		
Chloromethane	400000		ug/L	U		400000	100000		
Dibromochloromethane	200000		ug/L	U		200000	100000		
Ethylbenzene	200000		ug/L	U		200000	100000		
ethylene chloride	200000		ug/L	U		200000	100000		
1,1,1-trichloroethene	200000		ug/L	U		200000	100000		
Toluene	200000		ug/L	U		200000	100000		
Trichloroethene	200000		ug/L	U		200000	100000		
Trichlorofluoromethane	400000		ug/L	U		400000	100000		
Vinyl chloride	100000		ug/L	U		100000	100000		
cis-1,2-Dichloroethene	200000		ug/L	U		200000	100000		
trans-1,2-Dichloroethene	200000		ug/L	U		200000	100000		

Comments: The sample contained air bubbles greater than 1/4" which violates the headspace requirements of SW846-8260A. We were advised by the customer run the sample as is.

EPA Qualifiers:

J - Estimated value.

U - Analyte analyzed for but undetected. Analyte result was below the Limit of Quantitation (LOQ).

Analy Meth: PORTS-OA97333006

QC Batch: QC98116001 Test: AB-ACT-GPC

Rpt Basis: none

Date Approved

Prep Meth:

Analyzed: 04/24/98 00:00:00 J P BREWSTER

Approver: B W SHORT

05/01/98 12:28

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Alpha activity	92		pCi/ml	J				
Beta activity	58		pCi/ml					

Portsmouth Analytical Laboratory
Official Report

Meth:PORTS-XP4-TS-RL7380	QC Batch:QC98112009 Test:TC99-ACT-LS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:04/21/98 00:00:00 J P BREWSTER	Approver: B W SHORT	04/22/98 13:28

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	12.8		pCi/ml			0.8	

Analy Meth:PORTS-XP4-TS-RL7720ug	QC Batch:QC98129000 Test:TOTAL-U-AS	Rpt Basis:none	Date Approved
Prep Meth:	Analyzed:05/06/98 00:00:00 R J ANDRE	Approver: B W SHORT	05/11/98 13:13

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	56	7.5	ug/ml				
Uranium-235	3.0	0.6	wt %				

EPA Qualifiers:

J - Indicates an estimated value.

Waste Stream Number: 705-15

Waste Stream Title: Oil and Grease Filter Cake

1.S. 705-15

Lockheed Martin Utility Services
ES&H Laboratory
Analysis Results

AnalIS ID: 960307-145 Project: ER 9567D Requisition Number: 20243
Customer Sample ID: VER35946001 Customer: ENV RERSTORATION
Date Sampled: 6-MAR-1996 14:00 Date Sample Received: 7-MAR-1996
Sampled By: R CAUDILL Date Sample Completed: 19-APR-1996
Material Description: X-705 OIL\GREASE SLUDGE

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
SW846-1010	Flash Point	>80		oC	ML STEWART	1-APR-1996	96110022
SW846-3010A	Sample Prep Metals	COMPLETE			TE SHOOK	18-MAR-1996	96080306
SW846-6010A	Aluminum	1050NJ		ug/L	TE SHOOK	18-MAR-1996	96080306
	Barium	552		ug/L	TE SHOOK	18-MAR-1996	96080306
	Beryllium	11.0U		ug/L	TE SHOOK	18-MAR-1996	96080306
	Bismuth	NA		ug/L	TE SHOOK	18-MAR-1996	96080306
	Cadmium	18.0U		ug/L	TE SHOOK	18-MAR-1996	96080306
	Calcium	557000J		ug/L	TE SHOOK	18-MAR-1996	96080306
	Chromium	875		ug/L	TE SHOOK	18-MAR-1996	96080306
	Cobalt	34.0U		ug/L	TE SHOOK	18-MAR-1996	96080306
	Copper	42.8		ug/L	TE SHOOK	18-MAR-1996	96080306
	Iron	4130		ug/L	TE SHOOK	18-MAR-1996	96080306
	Lead	178U		ug/L	TE SHOOK	18-MAR-1996	96080306
	Magnesium	1270000		ug/L	TE SHOOK	18-MAR-1996	96080306
	Manganese	1920		ug/L	TE SHOOK	18-MAR-1996	96080306
	Nickel	620		ug/L	TE SHOOK	18-MAR-1996	96080306
	Silver	372N		ug/L	TE SHOOK	18-MAR-1996	96080306
	Sodium	2260000J		ug/L	TE SHOOK	18-MAR-1996	96080306
	Tin	NA		ug/L	TE SHOOK	18-MAR-1996	96080306
	Titanium	NA		ug/L	TE SHOOK	18-MAR-1996	96080306
	Vanadium	92.1		ug/L	TE SHOOK	18-MAR-1996	96080306
	Zinc	242		ug/L	TE SHOOK	18-MAR-1996	96080306
SW846-7470	Mercury	10UJ		ug/L	RL POLK	26-MAR-1996	96080292
SW846-9010A	Total Cyanide	0.09		MG/L	CJ HOLBROOK	8-MAR-1996	96100318
SW846-9030A	Sulfide	<5.0NJ		MG/L	CJ HOLBROOK	13-MAR-1996	96100391
TSD553-230	Gross Alpha	3.2		pCi/mL	JP BREWSTER	24-MAR-1996	96070394
	Gross Beta	7.0		pCi/mL	JP BREWSTER	24-MAR-1996	96070394
TSD553-380	Technetium	14.9		pCi/mL	JP BREWSTER	24-MAR-1996	96070393
TSD553-440	Cesium-134	<0.1J		pCi/ml	WC ZUEFLE	16-APR-1996	96070490
	Cesium-137	<0.2J		pCi/ml	WC ZUEFLE	16-APR-1996	96070490
	Cobalt-60	<0.2J		pCi/ml	WC ZUEFLE	16-APR-1996	96070490
	Gross Gamma	2.8J		pCi/ml	WC ZUEFLE	16-APR-1996	96070490

TSD553-700	% U-235	4.1	1.9	%	SJ JAMES	9-APR-1996	96070458
	Alpha Activity	<2		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Americium-241	<0.011		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Neptunium-237	<0.022		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Plutonium-238	<0.006		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Plutonium-239/240	<0.015		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Thorium-228	<0.025		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Thorium-230	<0.016		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Thorium-232	<0.012		pCi/mL	SJ JAMES	9-APR-1996	96070458
	Thorium-234	0.14	0.03	pCi/mL	SJ JAMES	9-APR-1996	96070458
	Uranium	0.44	0.09	ug/mL	SJ JAMES	9-APR-1996	96070458

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Aluminum	400	637.	159.25
Arsenic	400	308.4	77.10
Barium	400	394.9	98.73
Beryllium	400	308.4	77.10
Cadmium	400	377.7	94.43
Chromium	400	392.1	98.02
Cobalt	400	350.8	87.70
Copper	400	367.4	91.85
Lead	400	337.6	84.40
Mercury	40.0	44.9	112.25
N	400	380.8	95.20
Selenium	400	0.	0.00
Silver	400	290.6	72.65
Sulfide	25	12.6	50.40
Vanadium	400	342.3	85.57
Zinc	400	344.8	86.20

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 Date Approved: 19-APR-1996

***** COMMENT PAGE *****
***** 960307-145 *****

*** Comments from the Environmental and Industrial Hygiene Laboratory ****

-9010A Cyanide - This sample contained a layer of oil and solids; therefore, it was prepared by SW846-9013. A smaller aliquot was analyzed along with the batch with a result of 0.03 mg/L.

SW846-9030A Sulfide - This sample contained a layer of oil and was therefore extracted by SW846-9031. The result is reported as an estimate due to low spike recovery. Low spike recovery can indicate acid-insoluble sulfides. Three lab control standards were analyzed along with the batch resulting in 77%, 78% and 89% recovery, respectively. The sample was analyzed in duplicate with a result of <5.0 mg/L.

***** Comments from the Radiochemistry Laboratory *****

GAMMA RESULTS FOR 960307-145 ARE:

Analyte	Result(pCi/g)	+/-
K-40	2.8J	2.6J

*** Comments from the Spectrochemistry/ICP Laboratory ****

S -6010A Al and Nq qualified as estimate due to calibration verification not meeting acceptance limits.

SW846-6010A Ca and Na qualified as estimate due to lab control sample not meeting acceptance limits.

SW846-7470 Hg qualified as estimate due to initial calibration verification not meeting Q. C. limits.

Definition Page for Qualifiers/Flags

960307-145

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

- J - Qualify data for the sample as estimated.

- M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.

- N - Spike sample recovery is not within control limits.

- R - The reported value is unusable. The value is for informational purposes only.

- S - The reported value was obtained by the Method of Standard Additions (MSA).

- UJ - Qualify data for the sample as estimated.

- W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.

- * - Duplicate analysis is not within control limits.

Correlation coefficient for MSA is less than 0.995.

- , The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analysis.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

- B - Analyte was found in the reagent blank as well as the sample.

- J - Indicates an estimated value.

- ND - Not detected.

- NR - Not reported.

- NA - Not analyzed.

- A - Aldol condensation product.

- D - Secondary dilution.

- E - Exceeds initial calibration range.

- P - Probable Identification.

Waste Stream 705-15

Lockheed Martin Utility Services ES&H Laboratory Analysis Results

ANALIS ID: 960111-036 Project: ER 9567E Requisition Number: 19263
 Customer Sample ID: VER32290001 Customer: ENV RETORATION
 Date Sampled: 10-JAN-1996 13:35 Date Sample Received: 11-JAN-1996
 Sampled By: T BARR Date Sample Completed: 23-FEB-1996
 Material Description: X-7725 SOLID WASTE

** See comment page for comments. **

** See definition page for qualifiers/flags definitions. **

Analytical Proc. No.	Analysis	Result	Limit Of Error	Units	Analyst	Date Analyzed	QA File Number
1311/3010A	Sample Prep TCLP Metals	COMPLETE			LD DRYDEN	29-JAN-1996	012996-070
1311/3520	Sample Prep TCLP Semi-Volatile	COMPLETE			MR KELLEY	24-JAN-1996	96160040
ACD-5101	Density	0.94		%	ML STEWART	16-JAN-1996	96110002
ASTM-D2216	Moisture	76.0		%	ML STEWART	16-JAN-1996	96110003
SW846-1311	Sample Prep TCLP	COMPLETE			LD DRYDEN	23-JAN-1996	96170015
	Sample Prep TCLP	COMPLETE			LD DRYDEN	23-JAN-1996	96170015
	Sample Prep TCLP	COMPLETE			LD DRYDEN	23-JAN-1996	96170015
SI	Sample Prep Metals	COMPLETE			ML STEWART	17-JAN-1996	011796-041
3540	Sample Prep PCB	COMPLETE			DH BLUE	17-JAN-1996	96160017
SW846-6010A	Aluminum	3580		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Antimony	3.5UN		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Arsenic	5.3U		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Barium	28.6		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Beryllium	0.36		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Cadmium	1.3		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Calcium	25300		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Chromium	1.7		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Cobalt	0.88		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Copper	71.8N		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Iron	1670		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Lead	15.1		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Magnesium	7460		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Manganese	152		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Molybdenum	0.95UN		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Nickel	2.5		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Potassium	741N		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Selenium	7.2U		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Silver	1.2J		mg/kg	EL SIMPSON	26-JAN-1996	96080128
	Sodium	2750J		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Thallium	8.3UNJ		mg/kg	EL SIMPSON	26-JAN-1996	96080128
	Vanadium	1.5		MG\KG	EL SIMPSON	26-JAN-1996	96080128
	Zinc	33.4N		MG\KG	EL SIMPSON	26-JAN-1996	96080128

SW846-8080	PCB-1232	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M5
	PCB-1242	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M5
	PCB-1248	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M5
	PCB-1254	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M5
	PCB-1260	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M
	PCB-1268	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M
	Total PCB	< 0.5J	ug/g	DH BLUE	6-FEB-1996	96160205M5
SW846-9010A	Total Cyanide	1UNJ	mg/kg	SL LEMASTER	17-JAN-1996	96100097
SW846-9020A	TOX	< 10.0	ug/g	DE COLLINS	7-FEB-1996	96160207T3
SW846-9030A	Sulfide	50.3	mg/kg	CJ HOLBROOK	22-FEB-1996	96100274
SW846-9045C	pH	8.15	pH units	SL LEMASTER	12-JAN-1996	96100065
SW846-9095	Paint Filter Test	FAIL		MR KELLEY	19-JAN-1996	96170014
TSD553-280	Gross Alpha	22	pCi/g	JP BREWSTER	17-JAN-1996	96070066
	Gross Beta	15	pCi/g	JP BREWSTER	17-JAN-1996	96070066
TSD553-385	Technetium	6.7	pCi/g	JP BREWSTER	17-JAN-1996	96070067
TSD553-440	Cesium-134	<1.2J	pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Cesium-137	<1.3J	pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Cobalt-60	<2.2J	pCi/g	JD LITTERAL	17-JAN-1996	96070112
	Gross Gamma	58.8J	19.8 pCi/g	JD LITTERAL	17-JAN-1996	96070112
T	% U-235	1.8	0.47 %	CD GOOD	7-FEB-1996	96070168
	Alpha Activity	20	pCi/g	BW SHORT	7-FEB-1996	96070168
	Americium-241	<0.049	N/A pCi/g	CD GOOD	7-FEB-1996	96070168
	Neptunium-237	0.044	0.026 pCi/g	CD GOOD	7-FEB-1996	96070168
	Plutonium-238	<0.010	N/A pCi/g	CD GOOD	7-FEB-1996	96070168
	Plutonium-239/240	0.033	0.022 pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-228	0.33	0.093 pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-230	0.30	0.092 pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-232	0.36	0.090 pCi/g	CD GOOD	7-FEB-1996	96070168
	Thorium-234	4.8	0.62 pCi/g	CD GOOD	7-FEB-1996	96070168
	Uranium	15	1.9 ug/g	CD GOOD	7-FEB-1996	96070168

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
Antimony	19.8	0.	0.00
Arsenic	19.8	21.94	110.81
Barium	19.8	17.83	90.05
Beryllium	19.8	18.58	93.84
Cadmium	19.8	19.53	98.64
Chromium	19.8	17.79	89.85
Cobalt	19.8	18.09	91.36
Copper	19.8	14.64	73.94
L	19.8	15.56	78.59
Mn.,	19.8	12.12	61.21

Nickel	19.8	19.01	96.01
Potassium	198.02	108.06	54.57
Selenium	19.8	17.81	89.95
S	19.8	14.95	75.51
	19.8	0.	0.00
ium	19.8	16.21	81.87
Zinc	19.8	12.55	63.38

Laboratory Manager: B. W. Short (Radiochemistry Laboratory)
 D. K. Perez (AA/ICP) (Spectrochemistry/ICP Laboratory)
 R. E. Charles (Environmental and Industrial Hygiene Laboratory)
 C. J. Van Meter (Organic Analytical Services)
 C. J. Van Meter (TCLP Laboratory)

Date Approved: 23-FEB-1996

***** COMMENT PAGE *****
***** 960111-036 *****

*** Comments from the Environmental and Industrial Hygiene Laboratory *****

SW846-9010A cyanide result reported as an estimate due to sample spike recovery outside acceptable range: 16% and 17% (RPD= -8.6%).

***** Comments from the Organic Analytical Services *****

SW846-9020A (Proposed SW846-9023)

Sample VER32290001 contained an aqueous layer on top of the solid matrix. This aqueous layer was analyzed according to Section 7.11 of proposed method SW846-9023. The result reported is the corrected value of EOX. However, both the aqueous layer, and the solid layer were below detection limits.

SW846-8080:

The sample result was estimated due to the TCMX surrogate recovering exceeding method limits on the continuing calibration. However, the PCB recovery was within the method limits.

***** Comments from the TCLP Laboratory *****

TCLP_Method 1311/6010A : Silver was qualified as an estimate due to calibration verification not meeting Q.C. limits.

Arsenic and lead were qualified as estimates due to interference check not meeting acceptance limits.

***** Comments from the Spectrochemistry/ICP Laboratory *****

ASTM-D2216 Moisture duplicate result is 75.7 %.

SW846-6010A Na qualified as estimate due to calibration verification not meeting Q.C. limits.

SW846-6010A Ag & Tl qualified as estimate due to calibration verification and interference check not meeting acceptance limits. Will try these two analytes by AA.

SW846-7760 Ag result was 1.90U* mg/kg with a post-digestion spike of 102% recovery.

SW846-7841 Tl result was 0.97U mg/kg with a matrix spike of 94% recovery.

Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

- B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
- U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

- E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.
 - J - Qualify data for the sample as estimated.
 - M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greater than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the original and the repeated analysis.
 - N - Spike sample recovery is not within control limits.
 - R - The reported value is unusable. The value is for informational purposes only.
 - S - The reported value was obtained by the Method of Standard Additions (MSA).
 - UJ - Qualify data for the sample as estimated.
 - W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample concentration is less than 50% of the spike concentration.
 - * - Duplicate analysis is not within control limits.
 - Correlation coefficient for MSA is less than 0.995.
 - The value is between the LC and the LLD.
- Flagging "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

- U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
- B - Analyte was found in the reagent blank as well as the sample.
- J - Indicates an estimated value.
- ND - Not detected.
- NR - Not reported.
- NA - Not analyzed.
- A - Aldol condensation product.
- D - Secondary dilution.
- E - Exceeds initial calibration range.
- P - Probable Identification.

ANALYSIS DATA REPORT

Analys ID: 960111-036
Laboratory: TCLP Laboratory
File ID: 96170015
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32290001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19263
Date Sample Received: 11-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_SV_ACIDS_RPT

Date Extracted/Prepared: 24-JAN-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-FEB-1996
QA File Number: 96160205802
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
95-48-7	2-Methylphenol	0.020U			
108-39-4	m-Cresol	0.020U			
106-44-5	4-Methylphenol	0.020U			
87-86-5	Pentachlorophenol	0.040U			
95-95-4	2,4,5-Trichlorophenol	0.020U			
88-06-2	2,4,6-Trichlorophenol	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 960111-036
Laboratory: TCLP Laboratory
File ID: 96170015
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32290001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19263
Date Sample Received: 11-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_SV_B/N_RPT

Date Extracted/Prepared: 24-JAN-1996
Analysis Procedure Number: 1311/8270A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 5-FEB-1996
QA File Number: 96160205802
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
121-14-2	2,4-Dinitrotoluene	0.040U			
118-74-1	Hexachlorobenzene	0.020U			
87-68-3	Hexachlorobutadiene	0.020U			
67-72-1	Hexachloroethane	0.020U			
98-95-3	Nitrobenzene	0.020U			
110-86-1	Pyridine	0.020U			

ANALYSIS DATA REPORT

AnalIS ID: 960111-036
Laboratory: TCLP Laboratory
File ID: 96170015
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32290001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19263
Date Sample Received: 11-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_VOLATILES_RPT

Date Extracted/Prepared: 23-JAN-1996
Analysis Procedure Number: 1311/8260
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-JAN-1996
QA File Number: 96160129A2
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS		mg/L	CAS		mg/L
71-43-2	Benzene	0.002U			
56-23-5	Carbon Tetrachloride	0.002U			
108-90-7	Chlorobenzene	0.002U			
67-66-3	Chloroform	0.002U			
106-46-7	1,4-Dichlorobenzene	0.002U			
107-06-2	1,2-Dichloroethane	0.002U			
75-35-4	1,1-Dichloroethene	0.002U			
78-93-3	2-Butanone	0.100U			
127-18-4	Tetrachloroethene	0.002U			
79-01-6	Trichloroethene	0.014			
75-01-4	Vinyl Chloride	0.001U			

ANALYSIS DATA REPORT

AnalIS ID: 960111-036
Laboratory: TCLP Laboratory
File ID: 96170015
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32290001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19263
Date Sample Received: 11-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_METALS_ICP_RPT

Date Extracted/Prepared: 23-JAN-1996
Analysis Procedure Number: 1311/6010A
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 29-JAN-1996
QA File Number: 96080125
Dilution Factor: 1.0
Analyst: MR KELLEY

CAS		mg/L	CAS		mg/L
7440-38-2	Arsenic	0.560UJ			
7440-39-3	Barium	0.198			
7440-43-9	Cadmium	0.029U			
7440-47-3	Chromium	0.038			
7439-92-1	Lead	0.223UJ			
7782-49-2	Selenium	0.755U			
7440-22-4	Silver	0.034J			

ANALYSIS DATA REPORT

AnalIS ID: 960111-036
Laboratory: TCLP Laboratory
File ID: 96170015
Instrument ID:
Authorized By: C. J. Van Meter

Customer Sample ID: VER32290001
Customer: ENV RETORATION
Sample Matrix: SOLID WASTE
Requisition Number: 19263
Date Sample Received: 11-JAN-1996
Date Sampled: 10-JAN-1996

TCLP_HG_RPT

Date Extracted/Prepared: 23-JAN-1996
Analysis Procedure Number: 1311/7470
Percent Moisture:
Percent Moisture (decanted):
Associated Blank:

Date Analyzed: 30-JAN-1996
QA File Number: 96080112
Dilution Factor: 1.0
Analyst: LD DRYDEN

CAS	mg/L	CAS	mg/L
7439-97-6 Mercury	0.0100N		

Waste Stream Number: U705-16

Waste Stream Title: Grease

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point	EQ 176 F	NOTE: 80'C, 760 MM HG.
Melting Point	NG	
Freezing Point	EQ 41.9 F	NOTE: 5.5'C.
Pour Point	NG	
Softening Point	NG	

Specific Gravity . . .	EQ .879	NOTE: @ 20'C.
Vapor Pressure	EQ 74.6	NOTE: MM HG @ 20'C.
Vapor Density	EQ 2.8	
Percent Volatiles . .	~ 100	
Evaporation Rate . . .	~ 3	NOTE: BUAC=1.
pH	NG	
Molecular Weight . . .	EQ 78.11	
Viscosity	NG	
Solubility in Water. @ 25C	0.18%.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	EQ 12.2 F	NOTE: -11'C, TCC.
Flash Point, Open Cup . . .	NG	
Fire Point	NG	
Auto Ignition	EQ 1043.6 F	NOTE: 562'C.
Explosive/Flammable Limits		
Lower (LEL)	EQ 1.3	
Upper (UEL)	EQ 7.1	

Shipping Regulations

UN/NA Number	UN1114
D.O.T. Hazard Class . . .	FLAMMABLE LIQUID
Label	NOT GIVEN
Proper Shipping Name . .	BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

ENZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product %: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

CHEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

==== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable
C: Ceiling
PEL: Permissible Exposure Level
STEL: Short Term Exposure Level
TLV: Threshold Limit Value
TWA: Time Weighted Average
BuAc: Butyl Acetate
NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)
OHS: Occupational Health Services ("Hazardline")

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SUBMISSION DATE: FEBRUARY 21, 2000

APPENDIX C-2

MATERIAL SAFETY DATA SHEETS

MSDS - Supporting the Process Knowledge Waste Identification Reports

This volume contains the Material Safety Data Sheets which apply to the hazardous waste streams covered by the RCRA Part B Permit and referenced in the individual waste stream reports.

Material	MSDS Number/CAS Number
1,1,1-Trichloroethane	5994
1,2-Dichloroethane	107-06-2
1,2-Dichloroethylene	540-59-0
1-Methoxy-2-Propanol	6412
2-Propanol	6779
Acetic Acid	64-19-7
Acetone	5711
Acetylene	403
Ammonia	238
Ammonium Citrate	3012-65-5
Arsenic	346
Barium	342
Benzene	5505
Blanket Cleaning Solvent	Q334 / 64742-48-9
Boric Acid	10043-35-3
Cadmium	384
Carbon Disulfide	350
Carbon Tetrachloride	5250
Chlorine Trifluoride	5301
Chlorobenzene	366
Chloroform	5121
Chromium	335
Copper Cyanide	12
Cresol	409
Cresol Red	6330
Cresylic Acid	BHBYK / 108-95-2
CS Ink	6608
Cyanide	309
Cyclohexanone	5713
Deglazing Solvent	Q362 / BJMBQ / 71-55-6
Electrostatic Solution	5809
Endrin	BSTJG / 72-20-8
Ethanol	BNKTC / 64-17-5
Ethyl Ether	5996
Freon 113	5488

Gasoline	1050 / AD1
Heptachlor	BVBVF / 76-44-8
Hexane	161
Hydrochloric Acid	49
Hydrogen Fluoride	7664-39-3
Isopropyl Alcohol	5012
Kerosene, 1-K	1025
Kerosene,BP	1294
Lead	347
Mercury	341
Methanol	107
Methyl Ethyl Ketone	5370
Methyl Isobutyl Ketone	BPJBD / 108-10-1
Methylene Chloride	129
Multigraphics Cleaning Sol.	Q375 / BJRJQ
Multigraphics Electrostatic Solution	Q344 / BCHHW / 13943-58-3
Multilith Cylinder Cleaner	Q361 / BPDWV / 7697-37-2+C11+C27
Naphtha	64742-89-8
Nitric Acid	5423
Phosphoric Acid	5259
Potassium Ferricyanide	625
Propanol	CBDCW / 123-38-6
Pyridine	110-86-1
Selenium	348
Silver	6215
Sodium	BPSNG / 7440-23-5
Sodium Hydroxide	5604
Sulfamic Acid	05329-14-6
Sulfuric Acid	5150
Tetrachloroethylene	00127-18-4
Toluene	5454
Toner, Pre-mixed	Q351 / BMQXG
Trichloroethylene	5335
Universal Blanket Wash	BGCZQ
Xylene	892

PORTS MSDS #: 5994

PRODUCT: 1,1,1-TRICHLOROETHANE

PART NUMBER: T39120

FORMULA: C2-H3-CL3

KEYWORD: ORGANIC

PORTS NUMBER: 66-020-2316

PORTS MISC INFO:

PORTS RATING: HFR=210

MANUFACTURER:

FISHER SCIENTIFIC CO.
1 REAGENT LANE, P.O. BOX 375
FAIR LAWN
NJ

07410

PHONE: 201-796-7100

EMERGENCY PHONE: 201-796-7100

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 165 F
Melting Point. . . . EQ -36 F
Freezing Point. . . . NG
Pour Point. . . . NG
Softening Point. . . NG

NOTE: 74'C.

NOTE: -32'C.

Specific Gravity . . EQ 1.32
Vapor Pressure . . . EQ 100
Vapor Density. . . . EQ 4.55
Percent Volatiles. . NG
Evaporation Rate . . EQ 1
pH NG
Molecular Weight . . EQ 133.40
Viscosity. NG
Solubility in Water. 0.09%.

NOTE: MMHG @ 20'C.

NOTE: CCL4=1.

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID WITH A MILD CHLOROFORM-LIKE ODOR / ODOR THRESH: 100 PPM.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA
Flash Point, Open Cup . . . NA
Fire Point. NG
Auto Ignition. EQ 932 F
Explosive/Flammable Limits
Lower (LEL). EQ 7.5
Upper (UEL). EQ 12.5

NOTE: NOT AVAILABLE.

NOTE: NOT AVAILABLE.

NOTE: 500'C.

Shipping Regulations

UN/NA Number. . . . UN2831
D.O.T. Hazard Class. . . 6.1-POISONOUS MATL.
Label KEEP AWAY FROM FOOD
Proper Shipping Name . . 1,1,1-TRICHLOROETHANE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 7/13/95

===== Component Information =====

1,1-TRICHLOROETHANE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1910
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1910
STEL (PPM):
STEL (MG/M3): 2460
Product %: EQ 96.50
C.A.S. No.: 71556

Note:

PEL & TLV: 350 PPM / OSHA & ACGIH STEL: 450 PPM / NIOSH: 350 PPM 15 MIN-CELL

1,4-DIOXANE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 90
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 90
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 2.5
C.A.S. No.: 123911

Note:

PEL & TLV: 25 PPM SKIN / NIOSH: 1 PPM (3.6 MG/M3) RECOMMENDED 30-MIN CELL.

1,2-BUTYLENE OXIDE

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ .47
C.A.S. No.: 106887

NITROMETHANE

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ .34
C.A.S. No.: 75525

===== SUBSTANCE IDENTIFICATION =====

SUBSTANCE: 1,1,1-TRICHLOROETHANE

CAS NUMBER: 71-55-6

TRADE NAMES/SYNONYMS: ALPHA-TRICHLOROETHANE; CHLOROTHENE; AEROTHENE TT;
ETHYLIDINE CHLORIDE; METHYLTRICHLOROMETHANE; METHYLCHLOROFORM;
TRICHLOROMETHYLMETHANE; TRICHLOROETHANE; T-391; T-398; RCRA U226; UN 2831;
STCC 4941176; C2H3CL3; ACC14370

CHEMICAL FAMILY: HALOGEN COMPOUND, ALIPHATIC

MOLECULAR FORMULA: C2-H3-CL3

MOLECULAR WEIGHT: 133.40

CAT NO: T39120

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=1 REACTIVITY=0 PERSISTENCE=3

PA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

DATE: 09/13/95

EMERGENCY NUMBER: (201) 796-7100

CHEMTREC ASSISTANCE: (800) 424-9300

TELEPHONE NUMBER: (201) 796-7100

MANUFACTURER'S NAME AND ADDRESS:

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410

===== COMPONENTS AND CONTAMINANTS =====

SEE COMPONENT INFORMATION.

COMPONENT: 1,1,1-TRICHLOROETHANE

COMPONENT: 1,4-DIOXANE

COMPONENT: 1,2 BUTYLENE OXIDE

COMPONENT: NITROMETHANE

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE):

350 PPM (1910 MG/M3) NIOSH RECOMMENDED 15 MINUTE CEILING

200 PPM (1080 MG/M3) DFG MAK TWA;

1000 PPM (5400 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 2
TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY
WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1003, HALOGENATED
HYDROCARBONS).

1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

1,4-DIOXANE:

1 PPM (3.6 MG/M3) NIOSH RECOMMENDED 30 MINUTE CEILING

50 PPM (180 MG/M3) DFG MAK TWA (SKIN);

100 PPM (360 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY
WITH FLAME IONIZATION DETECTION; (NIOSH III # 1602).

100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY
WARNING AND RELEASE REQUIREMENTS - (JANUARY 1, 1988)

OSHA REVOKED THE FINAL RULE LIMITS OF JANUARY 19, 1989 IN RESPONSE TO THE
11TH CIRCUIT COURT OF APPEALS DECISION (AFL-CIO v. OSHA) EFFECTIVE JUNE 30,

1993. SEE 29 CFR 1910.1000 (58 FR 35338)

=== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD: 100 ppm

SOLVENT SOLUBILITY: ACETONE, BENZENE, METHANOL, ETHER, CARBON TETRACHLORIDE, CARBON DISULFIDE, N-HEPTANE, ETHANOL, CHLOROFORM

===== FIRE AND EXPLOSION DATA =====

FIRE AND EXPLOSION HAZARD: SLIGHT FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

THIS MATERIAL IS NEARLY NONFLAMMABLE. HIGH ENERGY, SUCH AS AN ELECTRIC ARC, IS NEEDED FOR IGNITION, AND THE FLAME TENDS TO GO OUT WHEN THE IGNITION SOURCE IS REMOVED.

FLASH POINT: NOT AVAILABLE

UPPER EXPLOSIVE LIMIT: 12.5%

LOWER EXPLOSIVE LIMIT: 7.5%

AUTOIGNITION TEMP.: 932 F (500 C)

FIREFIGHTING MEDIA: DRY CHEMICAL OR CARBON DIOXIDE (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

FIREFIGHTING: APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6, GUIDE PAGE 74).

EXTINGUISH USING AGENTS FOR SURROUNDING FIRE. COOL FIRE-EXPOSED CONTAINERS WITH FLOODING AMOUNTS OF WATER APPLIED FROM AS FAR A DISTANCE AS POSSIBLE. DO NOT ALLOW RUN-OFF WATER INTO SEWERS AND WATER SOURCES. AVOID BREATHING VAPORS.

===== TRANSPORTATION DATA =====

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101: 1,1,1-TRICHLOROETHANE-UN 2831

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101: 6.1 - POISONOUS MATERIALS

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101: PG III

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E: KEEP AWAY FROM FOOD

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:

EXCEPTIONS: 49-CFR 173.153

NON-BULK PACKAGING: 49 CFR 173.203

BULK PACKAGING: 49 CFR 173.241

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:

PASSENGER AIRCRAFT OR RAILCAR: 60 L

CARGO AIRCRAFT ONLY: 220 L

===== TOXICITY =====

ETHYL CHLOROFORM (1,1,1-TRICHLOROETHANE):

IRRITATION DATA: 450 PPM/8 HOURS EYE-MAN; 5 GM/12 DAYS INTERMITTENT SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE; 100 MG EYE-RABBIT MILD; 2 MG/24 HOURS EYE-RABBIT SEVERE.

TOXICITY DATA: 350 PPM INHALATION-MAN TCLO; 200 PPM/4 HOURS INHALATION-MAN TCLO; 920 PPM/70 MINUTES INHALATION-HUMAN TCLO; 18000 PPM/4 HOURS INHALATION-RAT LC50; 10000 PPM/1 HOUR/13 WEEKS INTERMITTENT INHALATION-RAT TCLO; 3911 PPM/2 HOURS INHALATION-MOUSE LC50; 1000 PPM/1 HOUR/13 WEEKS INTERMITTENT INHALATION-GUINEA PIG TCLO; 24400 MG/M3 INHALATION-CAT LC50; 15800 MG/KG SKIN-RABBIT LD50 (EPA-600/8-82-003F, 1084); 670 MG/KG ORAL-HUMAN TDLO; 9600 MG/KG ORAL-RAT LD50; 6 GM/KG ORAL-MOUSE LD50; 5660 MG/KG ORAL-RABBIT LD50; 9470 MG/KG ORAL-GUINEA PIG LD50; 750 MG/KG ORAL-DOG LD50; 16 GM/KG SUBCUTANEOUS-MOUSE LD50; 500 MG/KG SUBCUTANEOUS- RABBIT LDLO; 95 MG/KG INTRAVENOUS-DOG LDLO; 3593 MG/KG INTRAPERITONEAL-RAT LD50; 3636 MG/KG INTRAPERITONEAL-MOUSE LD50; 3100 MG/KG INTRAPERITONEAL-DOG LD50; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).

CARCINOGEN STATUS: ANIMAL INADEQUATE EVIDENCE (IARC GROUP-3).

LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.

ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY INHALATION, DERMAL ABSORPTION AND INGESTION.

TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT. POISONING MAY ALSO AFFECT THE HEART, LIVER AND KIDNEYS.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS OR LIVER, KIDNEY, OR CARDIOVASCULAR DISEASE.

ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECTS. STIMULANTS SUCH AS EPINEPHRINE MAY INDUCE VENTRICULAR FIBRILLATION.

1,4-DIOXANE:

IRRITATION DATA: 515 MG OPEN SKIN-RABBIT MILD; 300 PPM/15 MINUTES EYE-HUMAN; 100 MG EYE-RABBIT SEVERE; 100 MG/24 HOURS EYE-RABBIT MODERATE; 10 UG EYE- GUINEA PIG MODERATE.

TOXICITY DATA: 470 PPM INHALATION-HUMAN TCLO; 5500 PPM/1 MINUTE INHALATION-HUMAN TCLO; 470 PPM/3 DAYS INHALATION-HUMAN LCLO; 46 GM/M3/2 HOURS INHALATION-RAT LC50; 37 GM/M3/2 HOURS INHALATION-MOUSE LC50; 44 GM/M3/7 HOURS INHALATION-CAT LCLO; 20500 MG/M3 INHALATION-MAMMAL LC50; 6000 PPM/4 HOURS/2 WEEKS-INTERMITTENT INHALATION-RAT TCLO; 7600 MG/KG SKIN-RABBIT LD50; 2 GM/KG ORAL-RABBIT LD50; 5700 MG/KG ORAL-MOUSE LD50; 2 GM/KG ORAL-CAT LD50; 3150 MG/KG ORAL-GUINEA PIG LD50; 1500 MG/KG INTRAVENOUS-RABBIT LDLO; 1500 MG/KG INTRAVENOUS-CAT LDLO; 790 MG/KG INTRAPERITONEAL-MOUSE LD50; 799 MG/KG INTRAPERITONEAL-RAT LD50; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).

CARCINOGEN STATUS: ANTICIPATED HUMAN CARCINOGEN (NTP); HUMAN INADEQUATE EVIDENCE, ANIMAL SUFFICIENT EVIDENCE (IARC GROUP-2B). ORAL ADMINISTRATION PRODUCED ADENOMAS AND CARCINOMAS IN THE LIVER AND CARCINOMAS OF THE NASAL CAVITY IN RATS AND HEMATOMAS AND CARCINOMAS OF THE GALL BLADDER IN GUINEA PIGS.

LOCAL EFFECTS: IRRITANT - INHALATION, SKIN, EYES.

ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION; SLIGHTLY TOXIC BY DERMAL ABSORPTION AND INGESTION.

TARGET EFFECTS: HEPATOTOXIN; CENTRAL NERVOUS SYSTEM DEPRESSANT; NEPHROTOXIN. POISONING MAY AFFECT THE BRAIN.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING LIVER, KIDNEY, PULMONARY OR SKIN DISORDERS.

ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECTS.

===== HEALTH EFFECTS AND FIRST AID =====

INHALATION:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE): IRRITANT/NARCOTIC. 1000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE: EXPOSURE TO 500 PPM FOR 60 MINUTES SHOULD CAUSE NO EFFECT EXCEPT FOR A DISTINCTIVE ODOR WHILE 900-1000 PPM FOR 20 MINUTES MAY CAUSE MILD RESPIRATORY TRACT IRRITATION AND PROMPT BUT MINIMAL IMPAIRMENT OF EQUILIBRIUM WHICH MAY BE ACCOMPANIED BY HEADACHE, LASSITUDE AND ATAXIA. IMPAIRED PERFORMANCE OF BEHAVIORAL TESTS WAS ALSO REPORTED AT 1000 PPM. HIGHER LEVELS OF 2000-5000 PPM MAY CAUSE INCOORDINATION, ANESTHESIA, EUPHORIA, LOSS OF CONSCIOUSNESS, COMA AND DEATH DUE TO CENTRAL NERVOUS SYSTEM DEPRESSION, RESPIRATORY ARREST, OR CARDIAC ARRYTHMIA.

CARDIAC SENSITIZATION MAY BE A CONTRIBUTING FACTOR. OTHER EFFECTS MAY INCLUDE NAUSEA, VOMITING, DIARRHEA, DROWSINESS, CONVULSIONS, FALL OF BLOOD PRESSURE, LIVER AND KIDNEY DAMAGE, BRADYCARDIA AND BLOOD CLOTTING CHANGES.

CHRONIC EXPOSURE: NO ADVERSE EFFECTS RELATED TO EXPOSURE WERE REPORTED IN VOLUNTEERS EXPOSED TO 500 PPM FOR 7 HOURS A DAY FOR 5 DAYS, OR IN WORKERS EXPOSED TO 200 PPM FOR SEVERAL MONTHS TO 6 YEARS. THERE IS SOME EVIDENCE FROM HUMAN CASE REPORTS THAT REPEATED EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE LASTING DAMAGE TO THE HEART. EXPOSURE OF ANIMALS FOR 3 MONTHS AT CONCENTRATIONS FROM 1000 TO 10,000 PPM CAUSED SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION AND SOME PATHOLOGICAL CHANGES IN THE LIVERS AND LUNGS OF SOME SPECIES. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

1,4-DIOXANE: IRRITANT/NARCOTIC/HEPATOTOXIN/NEPHROTOXIN. 500 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE: MAY BE IRRITATING TO THE NOSE, THROAT AND RESPIRATORY TRACT AT 220 PPM. THIS COMPOUND HAS POOR WARNING PROPERTIES AND CAN BE INHALED IN AMOUNTS THAT MAY CAUSE SERIOUS SYSTEMIC INJURY. SYMPTOMS OF SYSTEMIC TOXICITY MAY INCLUDE HEADACHE, VERTIGO, DROWSINESS, DYSPNEA, NAUSEA, AND VOMITING. INHALATION CAUSED INCREASED SALIVATION, LACRIMATION, NARCOSIS, BEHAVIORAL CHANGES, AND DEATH IN ANIMALS. AUTOPSY REVEALED LUNG, LIVER AND KIDNEY DAMAGE, CONGESTION AND EDEMA OF THE LUNGS, AND INCREASED BLOOD COUNTS.

CHRONIC EXPOSURE: REPEATED EXPOSURE CAUSED MUCOUS MEMBRANE IRRITATION, DYSPNEA, HEADACHE, VERTIGO, LOSS OF APPETITE, NAUSEA AND VOMITING, PAIN AND TENDERNESS IN THE ABDOMEN AND LUMBAR REGION, DROWSINESS, MALAISE, LIVER ENLARGEMENT AND DAMAGE, OLIGURIA, ANURIA, UREMIA, COMA, AND DEATH FROM ACUTE RENAL FAILURE. AUTOPSIES REVEALED LUNG AND BRAIN CONGESTION, CENTRAL NERVOUS SYSTEM DAMAGE, LIVER NECROSIS, HEMORRHAGIC NEPHRITIS AND NECROSIS, LEUKOCYTOSIS, AND BRONCHOPNEUMONIA.

FIRST AID: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. DO NOT GIVE EPINEPHRINE OR OTHER STIMULANTS THAT MAY CAUSE VENTRICULAR ARRHYTHMIAS. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.). GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE): IRRITANT.

ACUTE EXPOSURE: DIRECT CONTACT MAY CAUSE IRRITATION AND REDNESS. VAPORS ARE POORLY ABSORBED, BUT THE LIQUID, ESPECIALLY IF CONFINED UNDER AN IMPERMEABLE BARRIER MAY BE ABSORBED TO SOME EXTENT. THIS ALONE IS UNLIKELY TO RESULT IN TOXIC EFFECTS, BUT MAY ADD TO THE EFFECTS OF INHALATION EXPOSURE.

CHRONIC EXPOSURE: REPEATED SKIN CONTACT MAY PRODUCE A DRY, SCALY, FISSURED DERMATITIS DUE TO THE DEFATTING PROPERTIES OF THE LIQUID, AND POSSIBLY BURNS.

1,4-DIOXANE: IRRITANT/NARCOTIC/HEPATOTOXIN/NEPHROTOXIN.

ACUTE EXPOSURE: MAY CAUSE IRRITATION WITH REDNESS AND PAIN. ALLERGIC CONTACT DERMATITIS HAS BEEN REPORTED. SKIN ABSORPTION MAY OCCUR AND CAUSE HEADACHE, NAUSEA AND VOMITING. SKIN ABSORPTION PRODUCED SIGNS OF UNSTEADINESS, INCOORDINATION, NARCOSIS, ERYTHEMA, AND LIVER AND KIDNEY DAMAGE IN ANIMALS.

CHRONIC EXPOSURE: PROLONGED OR REPEATED CONTACT MAY CAUSE DRYING AND CRACKING OF THE SKIN, DERMATITIS, AND ECZEMA. SKIN ABSORPTION MAY HAVE CONTRIBUTED TO THE DEATH OF A WORKER FOLLOWING SKIN AND INHALATION EXPOSURE FOR ONE WEEK. ANIMAL STUDIES INDICATE REPEATED SKIN APPLICATION MAY RESULT IN LIVER AND KIDNEY DAMAGE. TUMOR PROMOTER ACTIVITY HAS BEEN REPORTED IN MICE.

FIRST AID: REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE): IRRITANT.

ACUTE EXPOSURE: EXPOSURE TO 500 PPM MAY CAUSE IRRITATION AND REDNESS. DIRECT CONTACT WITH THE LIQUID MAY CAUSE TEMPORARY INJURY WITH COMPLETE RECOVERY EXPECTED IN 48 HOURS. DIRECT APPLICATION TO THE EYES OF RABBITS HAS CAUSED CONJUNCTIVAL IRRITATION, BUT NO CORNEAL DAMAGE.

CHRONIC EXPOSURE: REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.

1,4-DIOXANE: IRRITANT.

ACUTE EXPOSURE: VAPORS MAY CAUSE IRRITATION AT CONCENTRATIONS ABOVE 220 PPM. NO SERIOUS DISTURBANCES HAVE BEEN REPORTED BY EXTERNAL CONTACT. DIRECT APPLICATION TO RABBIT EYES CAUSED TRANSIENT CORNEAL INJURY.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE MAY RESULT IN CONJUNCTIVITIS.

FIRST AID: WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE): NARCOTIC.

ACUTE EXPOSURE: MAY CAUSE NAUSEA, VOMITING, DIARRHEA, GASTROINTESTINAL DISTURBANCES AND ABDOMINAL PAIN FOLLOWED BY CENTRAL NERVOUS SYSTEM DEPRESSION WITH HEADACHE, DIZZINESS, WEAKNESS, INCOORDINATION, MENTAL CONFUSION AND UNCONSCIOUSNESS. DEATH MAY OCCUR FROM CHRONIC RESPIRATORY FAILURE. OTHER SYMPTOMS AS DESCRIBED IN ACUTE INHALATION MAY ALSO OCCUR. MYOCARDIAL SENSITIZATION TO EPINEPHRINE AND SUBSEQUENT DEATH DUE TO CARDIAC ARREST MAY OCCUR. ASPIRATION MAY RESULT IN PULMONARY EDEMA OR CHEMICAL PNEUMONITIS.

CHRONIC EXPOSURE: REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

1,4-DIOXANE: NARCOTIC/HEPATOTOXIN/NEPHROTOXIN/CARCINOGEN.

ACUTE EXPOSURE: MAY CAUSE LIGHT BURNING SENSATION ON CONTACT WITH ORAL MUCOUS MEMBRANES. LARGE DOSES RESULTED IN WEAKNESS, INCOORDINATION, DEPRESSION, COMA AND DEATH IN ANIMALS. AUTOPSY REVEALED HEMORRHAGIC AREAS IN THE PYLORIC REGION OF THE STOMACH, BLADDERS DISTENDED WITH URINE, SLIGHT PROTEINURIA AND ENLARGED KIDNEYS. ASPIRATION MAY RESULT IN PNEUMONIA.

CHRONIC EXPOSURE: IN ANIMAL FEEDING STUDIES, THIS COMPOUND PRODUCED VER AND KIDNEY DEGENERATION AND NECROSIS, ULCERATION OF THE STOMACH, PATOMAS, CARCINOMA OF THE NASAL CAVITY, CARCINOMA OF THE KIDNEY PELVIS, LEUKEMIA, LYMPHOSARCOMA, CHOLANGIOMAS, GALL BLADDER CARCINOMAS, AND TUMORS OF THE LUNG. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION AND ADVICE ON WHETHER TO USE GASTRIC LAVAGE. EXTREME CARE MUST BE TAKEN TO PREVENT ASPIRATION. A CUFFED ENDOTRACHEAL TUBE USED BY QUALIFIED MEDICAL PERSONNEL MIGHT BE ADVISABLE. KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION SHOULD VOMITING OCCUR.

ANTIDOTE: NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

===== REACTIVITY =====

REACTIVITY: SLOWLY DECOMPOSES OVER TIME YIELDING HYDROGEN CHLORIDE. AN INHIBITOR MAY BE ADDED TO SCAVENGE THE ACID THAT IS FORMED AND PREVENT CORROSION TO METALS. WATER MAY REACT WITH THE INHIBITOR AND ALLOW THE NATURAL DECOMPOSITION TO OCCUR.

INCOMPATIBILITIES:

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE):

ACETONE: EXOTHERMIC REACTION.
ALKALI (STRONG): POSSIBLE VIOLENT REACTION.
ALUMINUM AND ALLOYS: MAY DECOMPOSE VIOLENTLY.
BARIUM: FIRE AND EXPLOSION HAZARD.
MAGNESIUM: VIOLENT DECOMPOSITION WITH EVOLUTION OF HYDROGEN CHLORIDE.
METALS (POWDERED): FIRE AND EXPLOSION HAZARD.
NITROGEN TETROXIDE: FORMS EXPLOSIVE MIXTURE.
OXIDIZERS (STRONG): POSSIBLE VIOLENT REACTION.
OXYGEN (GAS): POSSIBLE EXPLOSION WHEN HEATED @ 100 C.
OXYGEN (LIQUID): POSSIBLE VIOLENT EXPLOSION.
POTASH: FORMS FLAMMABLE OR EXPLOSIVE PRODUCT.
POTASSIUM AND ALLOYS: FORMS SHOCK-SENSITIVE MIXTURE.
POTASSIUM HYDROXIDE: FORMATION OF SPONTANEOUSLY FLAMMABLE PRODUCT.
RUBBER, PLASTICS, COATINGS: MAY BE ATTACKED.
SODIUM AND ALLOYS: FIRE AND EXPLOSION HAZARD.
SODIUM HYDROXIDE: FORMS SPONTANEOUSLY FLAMMABLE PRODUCT.
SODIUM-POTASSIUM ALLOY: POSSIBLE EXPLOSION.
TIN AND ALLOYS: INCOMPATIBLE.
ZINC AND ALLOYS: INCOMPATIBLE.

1,4-DIOXANE:

DECABORANE: FORMS SHOCK-SENSITIVE MIXTURE.
NICKEL (RANEY CATALYST): POSSIBLE EXPLOSIVE REACTION ABOVE 210 C.
NITRIC ACID + PERCHLORIC ACID: POSSIBLE EXPLOSIVE REACTION.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
SILVER PERCHLORATE: MAY FORM EXPLOSIVE COMPOUND.
SULFUR TRIOXIDE: VIOLENT DECOMPOSITION ON STORAGE.
TRIETHYNYLALUMINUM: MAY EXPLODE WHEN HEATED.

SEE ALSO ETHERS.

ETHERS:

BORON TRIIODIDE: VIGOROUS REACTION.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND CORROSIVE FUMES OF CHLORIDES, TOXIC FUMES OF PHOSGENE AND CHLOROACETYLENES, AND OXIDES OF CARBON.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

=== STORAGE AND DISPOSAL =====

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE:

STORE IN A COOL, DRY, WELL-VENTILATED LOCATION (NFPA 49, HAZARDOUS CHEMICALS DATA, 1991).

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL: DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40CFR 262. EPA HAZARDOUS WASTE NUMBER U226.

CONDITIONS TO AVOID: MAY BURN BUT DOES NOT IGNITE READILY. AVOID CONTACT WITH STRONG OXIDIZERS, EXCESSIVE HEAT, SPARKS, OR OPEN FLAME.

===== SPILL AND LEAK PROCEDURES =====

SOIL SPILL: DIG A PIT, POND, LAGOON OR HOLDING AREA TO CONTAIN LIQUID OR SOLID MATERIAL. DIKE SURFACE FLOW USING SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE. ABSORB BULK LIQUID WITH FLY ASH OR CEMENT POWDER.

WATER SPILL:

NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS SHOULD BE USED TO LIMIT SPILL TRAVEL.

NATURAL DEEP WATER POCKETS, EXCAVATED LAGOONS, OR SAND BAG BARRIERS SHOULD BE USED TO TRAP MATERIAL AT BOTTOM.

SUCTION HOSES SHOULD BE USED TO REMOVE TRAPPED MATERIAL.

THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) PROHIBITS CONTAMINATING ANY KNOWN SOURCE OF DRINKING WATER WITH SUBSTANCES KNOWN TO CAUSE CANCER AND/OR REPRODUCTIVE TOXICITY.

OCCUPATIONAL SPILL: SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL LIQUID SPILLS, TAKE UP WITH SAND, EARTH OR OTHER ABSORBENT MATERIAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY.

REPORTABLE QUANTITY (RQ): 1000 POUNDS

THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

===== PROTECTIVE EQUIPMENT =====

VENTILATION: PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET THE PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT SHOULD BE EXPLOSION-PROOF IF EXPLOSIVE CONCENTRATIONS OF DUST, VAPOR OR FUME ARE PRESENT.

RESPIRATOR: THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE):

1000 PPM - ANY SUPPLIED-AIR RESPIRATOR. ANY SELF-CONTAINED BREATHING APPARATUS.

ESCAPE - ANY AIR-PURIFYING, FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT OR BACK-MOUNTED ORGANIC VAPOR CANISTER. ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHALL PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

===== SPECIAL NOTES =====

AUTHORIZED - FISHER SCIENTIFIC, INC.

CREATION DATE: 10/25/84

REVISION DATE: 07/13/95

ADDITIONAL INFORMATION:

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MSDS for 1,2-DICHLOROETHANE

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1 - PRODUCT IDENTIFICATION

PRODUCT NAME: 1,2-DICHLOROETHANE
FORMULA: CLCH2CH2CL
FORMULA WT: 98.96
CAS NO.: 107-06-2
NIOSH/RTECS NO.: KL0525000
COMMON SYNONYMS: ETHYLENE DICHLORIDE; 1,2-DICHLOROETHANE; ETHYLENE CHLORIDE
PRODUCT CODES: H076,9302
EFFECTIVE: 01/22/87
REVISION #04

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH	- 3	SEVERE (CANCER CAUSING)
FLAMMABILITY	- 3	SEVERE (FLAMMABLE)
REACTIVITY	- 1	SLIGHT
CONTACT	- 2	MODERATE

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B
EXTINGUISHER

PRECAUTIONARY LABEL STATEMENTS

WARNING

FLAMMABLE

CAUSES IRRITATION

HARMFUL IF SWALLOWED OR INHALED

NOTE: REPORTED AS CAUSING CANCER IN LABORATORY ANIMALS. EXERCISE DUE CARE.
KEEP AWAY FROM HEAT, SPARKS, FLAME. AVOID CONTACT WITH EYES, SKIN, CLOTHING.
AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH
ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE,
USE ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE - WATER MAY BE INEFFECTIVE.
FLUSH SPILL AREA WITH WATER SPRAY.

SAF-T-DATA(TM) STORAGE COLOR CODE: RED (FLAMMABLE)

CAS# 107-06-2

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
1,2-DICHLOROETHANE	90-100	107-06-2

3 - PHYSICAL DATA

MSDS for 1,2-DICHLOROETHANE

Page 2

BOILING POINT:	84 C (183 F)	VAPOR PRESSURE(MM HG):	62
MELTING POINT:	-36 C (-33 F)	VAPOR DENSITY(AIR=1):	3.4
SPECIFIC GRAVITY: 1.25 (H2O=1)		EVAPORATION RATE: (BUTYL ACETATE=1)	6.5
SOLUBILITY(H2O):	SLIGHT (0.1 TO 1 %)	% VOLATILES BY VOLUME:	100

APPEARANCE & ODOR: CLEAR LIQUID WITH SWEET ODOR LIKE CHLOROFORM.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP) 13 C (56 F) NFPA 704M RATING: 2-3-0

FLAMMABLE LIMITS: UPPER - 15.9 % LOWER - 6.2 %

FIRE EXTINGUISHING MEDIA

USE ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
(WATER MAY BE INEFFECTIVE.)

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK.
CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG
OXIDIZERS MAY CAUSE FIRE.

TOXIC GASES PRODUCED

HYDROGEN CHLORIDE, PHOSGENE, CARBON MONOXIDE, CARBON DIOXIDE

5 - HEALTH HAZARD DATA

THIS SUBSTANCE IS LISTED AS AN NTP ANTICIPATED HUMAN CARCINOGEN, IARC
ANIMAL CARCINOGEN. ACCEPTABLE MAXIMUM PEAK ABOVE THE ACCEPTANCE CEILING
CONCENTRATION FOR AN EIGHT-HOUR SHIFT = 200 PPM FOR 5 MINUTES IN ANY 3 HOURS.
(PEL) CEILING = 100 PPM.

THRESHOLD LIMIT VALUE (TLV/TWA): 40 MG/M3 (10 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 60 MG/M3 (15 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): MG/M3 (50 PPM)

TOXICITY: LD50 (ORAL-RAT) (MG/KG) - 670

CARCINOGENICITY: NTP: YES IARC: NO Z LIST: NO OSHA REG: NO

MSDS for 1,2-DICHLOROETHANEPage 3

EFFECTS OF OVEREXPOSURE

INHALATION AND INGESTION ARE HARMFUL AND MAY BE FATAL.

INHALATION MAY CAUSE HEADACHE, NAUSEA, VOMITING, DIZZINESS, NARCOSIS,
SUFFOCATION, LOWER BLOOD PRESSURE, CENTRAL NERVOUS SYSTEM DEPRESSION.
INHALATION OF VAPORS MAY CAUSE PULMONARY EDEMA.

CONTACT WITH SKIN OR EYES MAY CAUSE SEVERE IRRITATION OR BURNS. PROLONGED
CONTACT MAY CAUSE SKIN SENSITIZATION. SUBSTANCE IS READILY ABSORBED
THROUGH THE SKIN.

INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS,
GASTROINTESTINAL IRRITATION.

CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE DAMAGE TO KIDNEYS, LIVER,
LUNGS, BLOOD, OR CENTRAL NERVOUS SYSTEM.

TARGET ORGANS

KIDNEYS, LIVER, EYES, SKIN, CENTRAL NERVOUS SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
BRONCHITIS, KIDNEY, LIVER, OR BLOOD DISORDERS, HEART DISORDERS, ASTHMA,
CIRCULATORY DISORDERS

ROUTES OF ENTRY

INGESTION, INHALATION, ABSORPTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.

IF SWALLOWED, DO NOT INDUCE VOMITING.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT
LEAST 15 MINUTES. FLUSH SKIN WITH WATER.

6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, ALUMINUM, MAGNESIUM, AMMONIA,
STRONG BASES, NITRIC ACID, POTASSIUM METAL

DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE, PHOSGENE,
CARBON MONOXIDE, CARBON DIOXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.

SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEAK
IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP
WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO

CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: D001 (IGNITABLE WASTE)

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS ABOVE 10 PPM, A SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

EYE/SKIN PROTECTION: SAFETY GOGGLES AND FACE SHIELD, UNIFORM, PROTECTIVE SUIT, NEOPRENE GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: RED (FLAMMABLE)

SPECIAL PRECAUTIONS

BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID. KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME	ETHYLENE DICHLORIDE
HAZARD CLASS	FLAMMABLE LIQUID
UN/NA	UN1184

LABELS
REPORTABLE QUANTITY

FLAMMABLE LIQUID
5000 LBS.

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME
HAZARD CLASS
UN/NA
LABELS

ETHYLENE DICHLORIDE
3.2, 6.1
UN1184
FLAMMABLE LIQUID, POISON

MSDS for 1,2-DICHLOROETHANE

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Use Web Browser "Back" key to return to previous topic

ACC97772

**** MATERIAL SAFETY DATA SHEET **** **** MATERIAL SAFETY DATA SHEET ****

1,2-Dichloroethylene, 99%, mixture of isomers
97772

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,2-Dichloroethylene, 99%, mixture of isomers

Company Identification: Acros Organics N.V.
Janssen Pharmaceuticaaan 3a
2440 Geel, Belgium

For information in North America, call: 800-ACROS-01
For information in Europe, call: 0032(0) 14575211
For emergencies in the US, call CHEMTREC: 800-424-9300
For emergencies outside the US, call: 0032(0) 14575299

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
540-59-0	1,2-Dichloroethylene		208-750-2

Hazard Symbols: XN F

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Not available.

Appearance: Not available. Flash Point: 6°C.

Not available.

Target Organs: Central nervous system, respiratory system, eyes.

Potential Health Effects

Eye:

May cause eye irritation.

Skin:

Causes moderate skin irritation.

Ingestion:

Harmful if swallowed. May cause nausea and vomiting.

Inhalation:

Harmful if inhaled. May cause narcotic effects.

Chronic:

Not available.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:

Get medical aid. Wash mouth out with water.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire.

Extinguishing Media:

Use water spray to cool fire-exposed containers. In case of fire use

water spray, dry chemical, carbon dioxide, or chemical foam.
 Autoignition Temperature: Not available.
 Flash Point: 6°C (42.80°F)
 NFPA Rating: health-2; flammability-3; reactivity-2
 Explosion Limits, Lower: Not available.
 Upper: Not available.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. Use a spark-proof tool.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Use only in a chemical fume hood.

Storage:

Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,2-Dichloroethylene	200 ppm ; 793	200 ppm TWA; 790	200 ppm TWA; 790
e	mg/m3	mg/m3 TWA	mg/m3 TWA

OSHA Vacated PELs:

1,2-Dichloroethylene:
 200 ppm TWA; 790 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	Not available.
Odor:	Pleasant odor
pH:	Not available.
Vapor Pressure:	Not available.
Vapor Density:	Not available.
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	48 - 60°C @ 760.00mm Hg
Freezing/Melting Point:	-57°C
Decomposition Temperature:	Not available.
Solubility:	slightly soluble
Specific Gravity/Density:	1.2650g/cm3
Molecular Formula:	C2H2Cl2
Molecular Weight:	96.94

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, light, ignition sources, exposure to air, exposure to moist air or water.

Incompatibilities with Other Materials:

Oxidizing agents, bases.

Hazardous Decomposition Products:

Hydrogen chloride, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:

CAS# 540-59-0: KV9360000

LD50/LC50:

CAS# 540-59-0: Oral, rat: LD50 = 770 mg/kg.

Carcinogenicity:

1,2-Dichloroethylene -

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology:

No data available.

Teratogenicity:

No data available.

Reproductive Effects:

No data available.

Neurotoxicity:

No data available.

Mutagenicity:

See actual entry in RTECS for complete information.

Other Studies:

No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:

Not available.

Environmental Fate:

Not available.

Physical/Chemical:

Not available.

Other:

Not available.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-Series Maximum Concentration of Contaminants: Not listed.

RCRA D-Series Chronic Toxicity Reference Levels: Not listed.

RCRA F-Series: Not listed.

RCRA P-Series: Not listed.

RCRA U-Series: Not listed.

Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT

No information available

IMO

Shipping Name: DICHLOROETHYLENE
Hazard Class: 3.2
UN Number: 1150
Packing Group: II

IATA

Shipping Name: 1,2-DICHLOROETHYLENE
Hazard Class: 3
UN Number: 1150
Packing Group: II

RID/ADR

Shipping Name: 1,2-DICHLOROETHYLENE

Dangerous Goods Code: 3(3B)

UN Number: 1150

Canadian TDG

No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

FEDERAL

TSCA

CAS# 540-59-0 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 540-59-0: Effective Date: March 11, 1994; Sunset Date: March 11

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

None of the chemicals in this material have an RQ.

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

Section 313

This chemical is not at a high enough concentration to be reportable under Section 313.

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.
CAS# 540-59-0 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

1,2-Dichloroethylene can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level:

None of the chemicals in this product are listed.

INTERNATIONAL

European Labeling in Accordance with EC Directives

Hazard Symbols: XN F

Risk Phrases:

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 29 Do not empty into drains.

S 7 Keep container tightly closed.

S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

Canada

CAS# 540-59-0 is listed on Canada's DSL/NDSL List.

CAS# 540-59-0 is listed on Canada's Ingredient Disclosure List.

Exposure Limits:

CAS# 540-59-0: OEL-AUSTRALIA:TWA 200 ppm (790 mg/m3). OEL-AUSTRIA:TWA 200 ppm (790 mg/m3). OEL-BELGIUM:TWA 200 ppm (793 mg/m3). OEL-DENMARK:TWA 200 ppm (790 mg/m3). OEL-FINLAND:TWA 200 ppm (790 mg/m3);STEL 250 ppm (990 mg/m3). OEL-GERMANY:TWA 200 ppm (790 mg/m3). OEL-HUNGARY:TWA 80 mg/m3;STEL 160 mg/m3. OEL-JAPAN:TWA 150 ppm (590 mg/m3). OEL-THE NETHERLANDS:TWA 200 ppm (790 mg/m3). OEL-THE PHILIPPINES:TWA 200 ppm (790 mg/m3). OEL-POLAND:TWA 50 mg/m3. OEL-RUSSIA:TWA 150 ppm (590 mg/m3). OEL-TURKEY:TWA 200 ppm (790 mg/m3);STEL 400 ppm. OEL-UNITED KINGDOM:TWA 200 ppm (790 mg/m3);STEL 250 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

Additional Information:

No additional information available.

MSDS Creation Date: 10/17/1996 Revision #0 Date: Original.

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PORTS MSDS #: 6412

PRODUCT: 1-METHOXY-2-PROPANOL, 98%

PART NUMBER: 26889-5

FORMULA: C4H10O2

KEYWORD: ORGANIC

PORTS NUMBER: 66-013-0938

PORTS MISC INFO:

PORTS RATING: HFR=230

MANUFACTURER:

ALDRICH CHEMICAL CO., INC.

P.O. BOX 355

MILWAUKEE

WI

53201

PHONE: 414-273-3850

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point BT 244 246 F NOTE: 118-119'C.
Melting Point NG
Freezing Point NG
Pour Point NG
Softening Point . . . NG

Specific Gravity . . EQ .922
Vapor Pressure . . . EQ 10.9 NOTE: MM @ 25'C.
Vapor Density . . . EQ 3.12
Percent Volatiles . . NG
Evaporation Rate . . NG
pH NG
Molecular Weight . . NG
Viscosity NG
Solubility in Water. NOT GIVEN
Odor/Appearance/Other Characteristics:
COLORLESS LIQUID.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 93 F NOTE: 33'C.
Flash Point, Open Cup . . . NG
Fire Point NG
Auto Ignition EQ 532 F NOTE: 277'C.
Explosive/Flammable Limits
Lower (LEL) EQ 1.6
Upper (UEL) EQ 13.8

Shipping Regulations

UN/NA Number UN3092

D.O.T. Hazard Class . . NG

Label NOT GIVEN

Proper Shipping Name . . 1-METHOXY-2-PROPANOL

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 12/13/95

==== Component Information =====

METHOXY-2-PROPANOL
OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 100
ACGIH TLV (MG/M3):
STEL (PPM): 150
STEL (MG/M3):
Product #: EQ 98
C.A.S. No.: 107982

==== SECTION 1. CHEMICAL IDENTIFICATION =====

NAME: 1-METHOXY-2-PROPANOL, 98%
CATALOG #: 26889-5
DATE: 12/13/95
EMERGENCY PHONE: 1-414-273-3850
TELEPHONE: (414) 273-3850
TWX: (910) 262-3052 ALDRICHEM MI
TELEX: 26 843 ALDRICH MI
FAX: (414) 273-4979
MANUFACTURER'S NAME AND ADDRESS:

ALDRICH CHEMICAL CO., INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201 USA

==== SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

EC NO: 203-539-1

SYNONYMS: DOWANOL 33B * DOWANOL PM * DOWANOL PM GLYCOL ETHER * DOWTHERM 209 *
GLYCOL ETHER PM * METHOXY ETHER OF PROPYLENE GLYCOL * 1-METHOXY-2-PROPANOL
(DOT) * POLY-SOLVE MPM * PROPASOL SOLVENT M * PROPYLENE GLYCOL METHYL ETHER *
PROPYLENE GLYCOL MONOMETHYL ETHER * ALPHA-PROPYLENE GLYCOL MONOMETHYL ETHER *
PROPYLENE GLYCOL MONOMETHYL ETHER (ACGIH) * PROPYLENGLYKOL-MONOMETHYLAETHER
(GERMAN) * UCAR SOLVENT LM (OBS.) * UN3092 (DOT) *

==== SECTION 3. HAZARDS IDENTIFICATION =====

LABEL PRECAUTIONARY STATEMENTS:

FLAMMABLE
IRRITANT
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.

IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND
SEEK MEDICAL ADVICE.

WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.

==== SECTION 4. FIRST-AID MEASURES =====

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

CALL A PHYSICIAN.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

===== SECTION 5. FIRE FIGHTING MEASURES =====

EXTINGUISHING MEDIA: CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM. WATER MAY BE EFFECTIVE FOR COOLING, BUT MAY NOT EFFECT EXTINGUISHMENT.

SPECIAL FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

FLAMMABLE.

USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS: VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASH BACK.

CONTAINER MAY OCCUR UNDER FIRE CONDITIONS. FORMS EXPLOSIVE MIXTURES IN AIR.

===== SECTION 6. ACCIDENTAL RELEASE MEASURES =====

EVACUATE AREA.

SHUT OFF ALL SOURCES OF IGNITION.

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.

COVER WITH AN ACTIVATED CARBON ADSORBENT, TAKE UP AND PLACE IN CLOSED CONTAINERS. TRANSPORT OUTDOORS.

VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

===== SECTION 7. HANDLING AND STORAGE =====

REFER TO SECTION 8.

===== SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION =====

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.

MECHANICAL EXHAUST REQUIRED.

SAFETY SHOWER AND EYE BATH.

USE NONSPARKING TOOLS.

DO NOT BREATHE VAPOR.

AVOID CONTACT WITH EYES, SKIN AND CLOTHING.

WASH THOROUGHLY AFTER HANDLING.

IRRITANT.

KEEP TIGHTLY CLOSED.

KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.

STORE IN A COOL DRY PLACE.

===== SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

FLASH POINT: 93 F 33 C

EXPLOSION LIMITS IN AIR:

UPPER: 13.8%

LOWER: 1.6%

AUTOIGNITION TEMPERATURE: 532 F 277 C

==== SECTION 10. STABILITY AND REACTIVITY =====

INCOMPATIBILITIES:

OXIDIZING AGENTS
ACID CHLORIDES
ACID ANHYDRIDES

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE

==== SECTION 11. TOXICOLOGICAL INFORMATION =====

ACUTE EFFECTS: MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION.
VAPOR OR MIST IS IRRITATING TO THE EYES, MUCOUS MEMBRANES AND UPPER
RESPIRATORY TRACT. CAUSES SKIN IRRITATION.

RTECS #: UB7700000

2-PROPANOL, 1-METHOXY-

IRRITATION DATA:

SKN-RBT 500 MG OPEN MLD	UCDS** 11/15/71
EYE-RBT 230 MG MLD	AMIHBC 9,509,54
EYE-RBT 500 MG/24H MLD	85JCAE -,625,86

TOXICITY DATA:

ORL-RAT LD50: 5660 MG/KG	AIHAAP 23,95,62
IHL-RAT LC50: 10000 PPM/5H	NPIRI* 1,105,74
IPR-RAT LD50: 3720 MG/KG	38MKAJ 2C,3977,82
SCU-RAT LD50: 7800 MG/KG	ARZNAD 22,569,72
IVN-RAT LD50: 4200 MG/KG	ARZNAD 22,569,72
ORL-MUS LD50: 11700 MG/KG	ARZNAD 22,569,72
IVN-MUS LD50: 5300 MG/KG	ARZNAD 22,569,72
ORL-RBT LD50: 5 GM/KG	ARZNAD 22,569,72
SKN-RBT LD50: 13 GM/KG	NPIRI* 1,105,74
SCU-RBT LD50: 5 GM/KG	ARZNAD 22,569,72
IVN-RBT LD50: 1200 MG/KG	ARZNAD 22,569,72

TARGET ORGAN DATA:

BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)
BEHAVIORAL (ATAXIA)
LUNGS, THORAX OR RESPIRATION (DYSPPNAE)

ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA
IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

==== SECTION 12. ECOLOGICAL INFORMATION =====

DATA NOT YET AVAILABLE.

==== SECTION 13. DISPOSAL CONSIDERATIONS =====

BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE.

SERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

===== SECTION 14. TRANSPORT INFORMATION =====

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

===== SECTION 15. REGULATORY INFORMATION =====

EUROPEAN INFORMATION:

EC INDEX NO: 603-064-00-3
FLAMMABLE
IRRITANT
R 10
FLAMMABLE.
S 24
AVOID CONTACT WITH SKIN.

REVIEWS, STANDARDS, AND REGULATIONS:

OEL = MAK
ACGIH TLV-TWA 100 PPM; STEL 150 PPM 85INAB 6,1310,91
MSHA STANDARD-AIR: TWA 100 PPM (360 MG/M3)
DTLWS* 3,27,73
OEL-BELGIUM: TWA 100 PPM (369 MG/M3); STEL 150 PPM (553 MG/M3) JAN93
OEL-DENMARK: TWA 100 PPM (360 MG/M3) JAN93
OEL-FINLAND: TWA 100 PPM (360 MG/M3); STEL 150 PPM; SKIN JAN93
OEL-FRANCE: TWA 100 PPM (360 MG/M3) JAN93
OEL-GERMANY: TWA 100 PPM (375 MG/M3); SKIN JAN93
OEL-THE NETHERLANDS: TWA 100 PPM (360 MG/M3); SKIN JAN93
OEL-SWITZERLAND: TWA 100 PPM (360 MG/M3); STEL 200 PPM (720 MG/M3) JAN93
OEL-UNITED KINGDOM: TWA 100 PPM (360 MG/ME); SKIN JAN93
OEL IN BULGARIA, COLUMBIA, JORDAN, KOREA CHECK ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV
NIOSH REL TO THE CHEMICAL-AIR:10H TWA 100 PPM;STEL 150 PPM
NIOSH* DHHS #92-100,92
NOHS 1974: HZD 81815; NIS 44; TNF 5953; NOS 36; TNE 26413
NOES 1983: HZD 81815; NIS 204; TNF 25947; NOS 133; TNE 373990; TFE 110572
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
ON EPA IRIS DATABASE
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, OCTOBER 1995

===== SECTION 16. OTHER INFORMATION =====

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. ALDRICH SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE.

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PORTS MSDS #: 6779

PRODUCT: 2-PROPANOL

PART NUMBER: A451-4

FORMULA: C3H8O

KEYWORD:

PORTS NUMBER: 66-001-6136

PORTS MISC INFO:

PORTS RATING: HFR=140

MANUFACTURER:
FISHER SCIENTIFICPHONE: PHONE:
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 180 F	NOTE: 82'C.
Melting Point. . . .	EQ -130 F	NOTE: -90'C.
Freezing Point. . . .	EQ -130 F	NOTE: -90'C.
Pour Point.	NG	
Softening Point. . . .	NG	
Specific Gravity . . .	EQ .78	NOTE: DENSITY.
Vapor Pressure	EQ 33	NOTE: MMHG.
Vapor Density.	EQ 2.1	
Percent Volatiles. . .	NG	
Evaporation Rate . . .	EQ 1.5	NOTE: N-BUAC=1.
pH	NA	NOTE: NOT AVAILABLE.
Molecular Weight . . .	EQ 60.0554	
Viscosity.	EQ 2.1	NOTE: CP @ 77'F.
Solubility in Water.	COMPLETELY SOLUBLE IN WATER.	
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, SOLVENT ODOR / DECOMPOSITION TEMPERATURE: NOT AVAILABLE.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . .	EQ 55 F	NOTE: 12.78'C.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	EQ 810 F	NOTE: 432.22'C.
Explosive/Flammable Limits		
Lower (LEL).	EQ 2.5	NOTE: @ 79'F.
Upper (UEL).	EQ 12.1	NOTE: @ 150'C.

Shipping Regulations

UN/NA Number.	UN1219
D.O.T. Hazard Class. . . .	3
Label	NOT GIVEN
Proper Shipping Name . . .	ISOPROPANOL

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 1/16/96

===== Component Information =====

PROPANOL
OSHA PEL (PPM):
OSHA PEL (MG/M3): 980
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 983
STEL (PPM):
STEL (MG/M3): 1230
Product #: EQ 100
C.A.S. No.: 67630

Note:

PEL(FINAL) & TLV: 400 PPM / ACGIH STEL: 500 PPM / NIOSH: 980 MG/M3, 400 PPM

===== SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

MSDS NAME: 2-PROPANOL

CATALOG NUMBERS: A415 20, A415 4, A415-20, A415-4, A416 1, A416 20, A416 20 001, A416 200, A416 200 001, A416 200 002, A416 200 003, A416 4, A416 500, A416-1, A416-20, A416-200, A416-4, A416-500, A416S 4, A416S-4, A416SK 4, A416SK-4, A416SS 115, A416SS 50, A416SS-11, A416SS-115, A416SS 20, A416SS-200, A416SS-30, A416SS-50, A417 1, A417 4, A417-1, A417-4, A419 1, A419 4, A419-1, A419-4, A426P 4, A426P-4, A426S 20, A426S 200, A426S 4, A426S 20, A426S-200, A426S-4, A432-1, A451 1, A451 4, A451-1, A451-4, A451SK 1, A451SK 4, A451SK-1, A451SK-4, A464 4, A464-4, A519 4, A520 4, A520-4, HC 500 1GAL, S77795, S77798

SYNONYMS: ISOPROPANOL, DIMETHYL CARBINOL, ISOPROPYL ALCOHOL

2090

CAT NO: A4164

DATE: 01/16/96

FOR INFORMATION, CALL: 201-796-7100

EMERGENCY NUMBER: 201-796-7100

FOR CHEMTREC ASSISTANCE, CALL: 800-424-9300

MANUFACTURER'S NAME AND ADDRESS:

FISHER SCIENTIFIC
1 REAGENT LANE
FAIR LAWN, NJ 07410

===== SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

CHEMICAL NAME	EINECS#
2-PROPANOL	UNLISTED

===== SECTION 3 - HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW:

APPEARANCE: COLORLESS LIQUID WITH AROMATIC ODOR.

WARNING! FLAMMABLE LIQUID. FP = 55 F. MAY CAUSE SKIN IRRITATION AND DRYNESS DUE TO DEFATTING OF THE SKIN. MAY CAUSE EYE IRRITATION WITH POSSIBLE INJURY.

INHALATION AND INGESTION CAN CAUSE IRRITATION TO THE RESPIRATORY AND DIGESTIVE TRACTS, AND MAY PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY DIZZINESS, DROWSINESS, HEADACHE, NAUSEA AND VOMITING. MAY CAUSE KIDNEY DAMAGE.

TARGET ORGANS: KIDNEYS, CENTRAL NERVOUS SYSTEM.

POTENTIAL HEALTH EFFECTS:

EYE: PRODUCES IRRITATION, CHARACTERIZED BY A BURNING SENSATION, REDNESS, TEARING, INFLAMMATION, AND POSSIBLE CORNEAL INJURY.

SKIN:

PROLONGED AND/OR REPEATED CONTACT MAY CAUSE DEFATTING OF THE SKIN AND DERMATITIS.

MAY CAUSE IRRITATION WITH PAIN AND STINGING, ESPECIALLY IF THE SKIN IS ABRADED.

INGESTION:

MAY CAUSE GASTROINTESTINAL IRRITATION WITH NAUSEA, VOMITING AND DIARRHEA.

MAY CAUSE KIDNEY DAMAGE.

MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION, CHARACTERIZED BY EXCITEMENT, FOLLOWED BY HEADACHE, DIZZINESS, DROWSINESS, AND NAUSEA.

ADVANCED STAGES MAY CAUSE COLLAPSE, UNCONSCIOUSNESS, COMA, AND POSSIBLE DEATH DUE TO RESPIRATORY FAILURE.

INHALATION:

INHALATION OF HIGH CONCENTRATIONS MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS CHARACTERIZED BY HEADACHE, DIZZINESS, UNCONSCIOUSNESS AND COMA.

INHALATION OF VAPOR MAY CAUSE RESPIRATORY TRACT IRRITATION.

CHRONIC:

PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DEFATTING AND DERMATITIS. MAY CAUSE ALLERGIC SKIN REACTION IN SOME INDIVIDUALS.

===== SECTION 4 - FIRST AID MEASURES =====

EYES:

IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE UPPER AND LOWER LIDS.

GET MEDICAL AID IMMEDIATELY.

SKIN:

FLUSH SKIN WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.

GET MEDICAL AID IF IRRITATION DEVELOPS OR PERSISTS.

INGESTION:

IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2-4 CUPFULS OF MILK OR WATER. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL AID IMMEDIATELY.

INHALATION: GET MEDICAL AID IMMEDIATELY. REMOVE FROM EXPOSURE TO FRESH AIR IMMEDIATELY. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS

DIFFICULT, GIVE OXYGEN.

ES TO PHYSICIAN:

URINE ACETONE TEST MAY BE HELPFUL IN DIAGNOSIS.
NONE REPORTED.

===== SECTION 5 - FIRE FIGHTING MEASURES =====

GENERAL INFORMATION:

AS IN ANY FIRE, WEAR A SELF-CONTAINED BREATHING APPARATUS IN PRESSURE-DEMAND, MSHA/NIOSH (APPROVED OR EQUIVALENT), AND FULL PROTECTIVE GEAR.

VAPORS CAN TRAVEL TO A SOURCE OF IGNITION AND FLASH BACK.

USE WATER SPRAY TO KEEP FIRE-EXPOSED CONTAINERS COOL.

CONTAINERS MAY EXPLODE IN THE HEAT OF A FIRE.

THIS CHEMICAL POSES AN EXPLOSION HAZARD.

EXTINGUISHING MEDIA:

FOR SMALL FIRES, USE DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM.

USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.

WATER MAY BE INEFFECTIVE.

AUTOIGNITION TEMPERATURE: 810 F (432.22 C)

FLASH POINT: 55 F (12.78 C)

EXPLOSION LIMITS:

LOWER: 2.5 AT 79 F

UPPER: 12.1 AT 150 F

===== SECTION 6 - ACCIDENTAL RELEASE MEASURES =====

GENERAL INFORMATION: USE PROPER PERSONAL PROTECTIVE EQUIPMENT AS INDICATED IN SECTION 8.

SPILLS/LEAKS: ABSORB SPILL WITH INERT MATERIAL, (E.G., DRY SAND OR EARTH), THEN PLACE INTO A CHEMICAL WASTE CONTAINER. REMOVE ALL SOURCES OF IGNITION.

===== SECTION 7 - HANDLING AND STORAGE =====

HANDLING:

WASH THOROUGHLY AFTER HANDLING.

REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

USE WITH ADEQUATE VENTILATION.

USE SPARK-PROOF TOOLS AND EXPLOSION PROOF EQUIPMENT.

AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.

EMPTY CONTAINERS RETAIN PRODUCT RESIDUE, (LIQUID AND/OR VAPOR), AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, SPARKS OR OPEN FLAMES.

KEEP CONTAINER TIGHTLY CLOSED.

AVOID INGESTION AND INHALATION.

STORAGE:

KEEP AWAY FROM HEAT, SPARKS, AND FLAME.

KEEP AWAY FROM SOURCES OF IGNITION.

KEEP FROM CONTACT WITH OXIDIZING MATERIALS.

STORE IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE SUBSTANCES.

----- SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION -----

ENGINEERING CONTROLS: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP AIRBORNE CONCENTRATIONS BELOW THE PERMISSIBLE EXPOSURE LIMITS.

EXPOSURE LIMITS:

CHEMICAL NAME	ACGIH	NIOSH	OSHA - FINAL PELs
2-PROPANOL	400 PPM; 983 MG/M3; 500 PPM STEL; 1230 MG/M3 STEL	400 PPM TWA; 980 MG/M3 TWA; 500 PPM STEL; 1225 MG/M3 STEL	400 PPM TWA; 980 MG/M3 TWA

OSHA VACATED PELs: 2-PROPANOL: 400 PPM TWA; 980 MG/M3 TWA; 500 PPM STEL; 1225 MG/M3 STEL

PERSONAL PROTECTIVE EQUIPMENT:

EYES: WEAR SAFETY GLASSES AND CHEMICAL GOGGLES IF SPLASHING IS POSSIBLE.

SKIN: WEAR APPROPRIATE GLOVES TO PREVENT SKIN EXPOSURE.

CLOTHING: WEAR APPROPRIATE PROTECTIVE CLOTHING TO MINIMIZE CONTACT WITH SKIN.

RESPIRATORS: A NIOSH/MSHA APPROVED AIR PURIFYING RESPIRATOR WITH AN ORGANIC VAPOR CARTRIDGE OR CANISTER MAY BE PERMISSIBLE UNDER CERTAIN CIRCUMSTANCES WHERE AIRBORNE CONCENTRATIONS ARE EXPECTED. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA.

===== SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

DECOMPOSITION TEMPERATURE: NOT AVAILABLE.

MOLECULAR FORMULA: C3H8O

===== SECTION 10 - STABILITY AND REACTIVITY =====

CHEMICAL STABILITY: STABLE.

CONDITIONS TO AVOID: STABLE, INCOMPATIBLE MATERIALS, IGNITION SOURCES.

INCOMPATIBILITIES WITH OTHER MATERIALS: STRONG OXIDIZERS, ACETALDEHYDE, CHLORINE, ETHYLENE OXIDE, ACIDS AND ISOCYANATES, HYDROGEN + PALLADIUM, NITROFORM, OLEUM, PHOSGENE, POTASSIUM T-BUTOXIDE, OXYGEN, TRINITROMETHANE, BARIUM PERCHLORATE, TETRAFLUOROBORATE, CHROMIUM TRIOXIDE, SODIUM DICHROMATE + SULFURIC ACID, ALUMINUM, AND ALUMINUM TRIISOPROPOXIDE.

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE, ACRID SMOKE AND FUMES.

HAZARDOUS POLYMERIZATION: HAS NOT BEEN REPORTED.

===== SECTION 11 - TOXICOLOGICAL INFORMATION =====

RTECS#:

CAS# 67-63-0: NT8050000

LD50/LC50:

CAS# 67-63-0: ORAL, MOUSE: LD50 = 3600 MG/KG; ORAL, RABBIT LD50 = 6410

MG/KG; ORAL, RAT: LD50 = 5045 MG/KG; SKIN, RABBIT: LD50 = 12800 MG/KG.

RCINOGENICITY: 2-PROPANOL -

ACGIH: A2-SUSPECTED HUMAN CARCINOGEN.

CALIFORNIA: CARCINOGEN

NIOSH: OCCUPATIONAL CARCINOGEN

NTP: SUSPECT CARCINOGEN

OSHA: POSSIBLE SELECT CARCINOGEN

IARC: GROUP 3 CARCINOGEN

EPIDEMIOLOGY: EARLY EPIDEMIOLOGICAL STUDIES SUGGESTED AN ASSOCIATION BETWEEN THE STRONG ACID MANUFACTURE OF ISOPROPYL ALCOHOL AND PARANASAL SINUS CANCER IN WORKERS. THE RISK OF LARYNGEAL CANCER MAY ALSO BE INCREASED IN THESE WORKERS. HOWEVER, IT HAS NOT BEEN TESTED ADEQUATELY IN ANIMALS TO ASSESS ITS CARCINOGENICITY.

TERATOGENICITY: NO DATA AVAILABLE.

REPRODUCTIVE EFFECTS: NO DATA AVAILABLE.

NEUROTOXICITY: NO DATA AVAILABLE.

MUTAGENICITY: NO DATA AVAILABLE.

OTHER STUDIES: NO DATA AVAILABLE.

===== SECTION 12 - ECOLOGICAL INFORMATION =====

ECOTOXICITY:

ACUTE AQUATIC EFFECTS:

FATHEAD MINNOW: LC50 = 1000 MG/L/96 HR.

GOLDEN ORFE: LC50 = 8970 MG/L/48 HR.

GOLDFISH: LC50 = GT50000 MG/L/24 HR.

ENVIRONMENTAL FATE: THIS CHEMICAL HAS A LOW POTENTIAL TO AFFECT AQUATIC ORGANISMS, SECONDARY WASTE TREATMENT MICROORGANISMS, AND THE GERMINATION AND GROWTH OF SOME PLANTS. IT IS READILY BIODEGRADABLE AND IS NOT EXPECTED TO PERSIST IN AN AQUATIC ENVIRONMENT. IT IS NOT LIKELY TO BIOCONCENTRATE.

PHYSICAL/CHEMICAL: NONE

PHYSICAL/CHEMICAL: NONE

===== SECTION 13 - DISPOSAL CONSIDERATIONS =====

DISPOSE OF IN A MANNER CONSISTENT WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

RCRA D SERIES MAXIMUM CONCENTRATION OF CONTAMINANTS: NOT LISTED.

RCRA D SERIES CHRONIC TOXICITY REFERENCE LEVELS: NOT LISTED.

RCRA F SERIES: NOT LISTED.

RCRA P-SERIES: NOT LISTED.

RCRA U-SERIES: NOT LISTED.

NOT LISTED AS A MATERIAL BANNED FROM LAND DISPOSAL ACCORDING TO RCRA.

===== SECTION 14 - TRANSPORT INFORMATION =====

US DOT:

SHIPPING NAME: ISOPROPANOL
HAZARD CLASS: 3
UN NUMBER: UN1219
PACKING GROUP: II

IMO: NO INFORMATION AVAILABLE.

IATA: NO INFORMATION AVAILABLE.

RID/ADR: NO INFORMATION AVAILABLE.

CANADIAN TDG:

SHIPPING NAME: ISOPROPANOL
HAZARD CLASS: 3
UN NUMBER: UN1219

OTHER INFORMATION: FLASHPOINT 12C

===== SECTION 15 - REGULATORY INFORMATION =====

FEDERAL:

TSCA:

CAS# 67-63-0 IS LISTED ON THE TSCA INVENTORY.

HEALTH & SAFETY REPORTING LIST:

CAS# 67-63-0: EFFECTIVE DATE: DECEMBER 15, 1986

CHEMICAL TEST RULES:

CAS# 67-63-0: TESTING REQUIRED BY: MANUFACTURERS; IMPORTERS; PROCESSOR

SECTION 12B:

CAS# 67-63-0: EXPORT NOTIFICATION REQUIRED - SECTION 4

TSCA SIGNIFICANT NEW USE RULE: NONE OF THE CHEMICALS IN THIS MATERIAL
HAVE A SNUR UNDER TSCA.

CERCLA/SARA:

SECTION 302 (RQ): NONE OF THE CHEMICALS IN THIS MATERIAL HAVE AN RQ.
SECTION 302 (TPQ): NONE OF THE CHEMICALS IN THIS PRODUCT HAVE A TPQ.
SECTION 313:

SECTION 313: THIS MATERIAL CONTAINS 2 PROPANOL (CAS# 67-63-0, 100%), WHICH
IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III AND
40 CFR PART 373.

CLEAN AIR ACT:

THIS MATERIAL DOES NOT CONTAIN ANY HAZARDOUS AIR POLLUTANTS.
THIS MATERIAL DOES NOT CONTAIN ANY CLASS 1 OZONE DEPLETORS.
THIS MATERIAL DOES NOT CONTAIN ANY CLASS 2 OZONE DEPLETORS.

CLEAN WATER ACT:-

NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED AS HAZARDOUS SUBSTANCES
UNDER THE CWA.

NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED AS PRIORITY POLLUTANTS
UNDER THE CWA.

NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED AS TOXIC POLLUTANTS
UNDER THE CWA.

OSHA: NONE OF THE CHEMICALS IN THIS PRODUCT ARE CONSIDERED HIGHLY HAZARDOUS BY OSHA.

STATE:

2-PROPANOL CAN BE FOUND ON THE FOLLOWING STATE RIGHT TO KNOW LISTS:
CALIFORNIA, NEW JERSEY, FLORIDA, PENNSYLVANIA, MINNESOTA, MASSACHUSETTS.

CALIFORNIA NO SIGNIFICANT RISK LEVEL: NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED.

INTERNATIONAL:

CANADA:

CAS# 67-63-0 IS LISTED ON CANADA'S DSL/NDL LIST.
CAS# 67-63-0 IS LISTED ON CANADA'S INGREDIENT DISCLOSURE LIST.

EUROPEAN LABELING IN ACCORDANCE WITH EC DIRECTIVES:

HAZARD SYMBOLS: NOT AVAILABLE.
RISK PHRASES:
SAFETY PHRASES:

EXPOSURE LIMITS: OEL-AUSTRALIA: TWA 400 PPM (980 MG/M3); STEL 500 PPM (1225 MG/M3). OEL-BELGIUM: TWA 400 PPM (985 MG/M3); STEL 500 PPM (1230 MG/M3). OEL-DENMARK: TWA 200 PPM (490 MG/M3); SKIN. OEL-FRANCE: STEL 400 PPM (980 MG/M3). OEL-GERMANY: TWA 400 PPM (980 MG/M3). OEL-JAPAN: STEL 400 PPM (980 MG/M3). OEL-THE NETHERLANDS: TWA 400 PPM (980 MG/M3); SKIN. OEL-THE PHILIPPINES: TWA 400 PPM (980 MG/M3). OEL-RUSSIA: STEL 400 PPM (10 MG/M3). OEL-SWEDEN: TWA 150 PPM (350 MG/M3); STEL 250 PPM (600 MG/M3). OEL-SWITZERLAND: TWA 400 PPM (980 MG/M3); STEL 800 PPM. OEL-TURKEY: TWA 200 PPM (500 MG/M3). OEL-UNITED KINGDOM: TWA 400 PPM (980 MG/M3) STEL 500 PPM; SKIN. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGI TLV

===== SECTION 16 - ADDITIONAL INFORMATION =====

ADDITIONAL INFORMATION: NO ADDITIONAL INFORMATION AVAILABLE.

MSDS CREATION DATE: FEBRUARY 2, 1995

THE INFORMATION ABOVE IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

ACETIC ACID

Mallinckrodt

Material Safety Data

Emergency Phone Number: 314-539-1600

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Mallinckrodt, Inc., Science Products Division, P.O. Box 800, Paris, KY 40362.

ACETIC ACID GLACIAL

PRODUCT IDENTIFICATION:

Synonyms: Acetic acid, methane carboxylic acid

Formula CAS No.: 64-19-7

Molecular Weight: 60.05

Chemical Formula: CH_3COOH

Hazardous Ingredients: Acetic Acid Glacial

PRECAUTIONARY MEASURES

DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG DAMAGE. COMBUSTIBLE.

Do not get in eyes, on skin, or on clothing.

Avoid breathing vapor.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Keep away from heat and flame.

This substance is classified as a POISON under the Federal Causic Poison Act.

EMERGENCY/FIRST AID

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. If swallowed, DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician. SEE SECTION 5.

DOT Hazard Class: Corrosive Material

SECTION 1 Physical Data

Appearance: Clear, colorless liquid.

Odor: Strong, vinegar-like.

Solubility: Infinite in water.

Boiling Point: 118°C (244°F).

Melting Point: 16.6°C (62°F).

Density: 1.05

Vapor Density (Air=1): 2.1

Vapor Pressure (mm Hg): 11 @ 20°C (68°F).

Evaporation Rate: 0.97

SECTION 2 Fire and Explosion Information

Fire:

Combustible. Flashpoint: 40°C (104°F) (closed cup)

Autoignition temperature: 427°C (800°F).

Flammable limits, in air, % by volume at 100°C (212°F): lcl. 5.4; ucl: 16.0.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above.

Fire Extinguishing Media:

Water, dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures. Vapors can flow along surfaces to distant ignition source and flash back. Water diluted acid can react with metals to form hydrogen gas.

SECTION 3 Reactivity Data

Stability:

Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability.

Hazardous Decomposition Products:

When heated to decomposition may emit toxic gases and vapors such as carbon monoxide.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Oxidizers, chromic acid, sodium peroxide, nitric acid, strong caustics, heat, flame.

SECTION 4 Leak/Spill Disposal Information

Ventilate and evacuate area. Clean-up personnel require protective clothing and respiratory protection from vapors. Allow only qualified personnel to handle the spill. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect men attempting to stop leak. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures. Contain and recover liquid when possible. Absorb with vermiculite, dry sand, earth, or similar material. Scoop up with non-sparking tools and place in a closed container, and dispose in a RCRA approved facility. Do not flush to the sewer.

Reportable Quantity (RQ)(CWA/CERCLA) 5000 lbs

Ensure compliance with local, state and federal regulations

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 1

Effective Date: 1-13-87 Supersedes 09-26-85

ACETIC ACID GLACIAL

CAS # 64-19-7

64197

Mallinckrodt

Material Safety Data

Emergency Phone Number: 314-539-1600

Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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Mallinckrodt, Inc., Science Products Division, P.O. Box 800, Paris, KY 40362.

SECTION 5 Health Hazard Information

A. EXPOSURE / HEALTH EFFECTS

Inhalation:

Inhalation of concentrated vapors may cause serious damage to the lining of the nose, throat, and lungs. Breathing difficulties may occur. Neither odor nor degree of irritation are adequate to indicate vapor concentration.

Ingestion:

Swallowing can cause severe injury leading to death. Symptoms include sore throat, vomiting, diarrhea. Ingestion of as little as 1.0 ml has resulted in perforation of the esophagus.

Skin Contact:

Contact with concentrated solution may cause serious damage to the skin. Effects may include redness, pain, skin burns. High vapor concentrations may cause skin sensitization.

Eye Contact:

Eye contact with concentrated solutions may cause severe eye damage followed by loss of sight. Exposure to vapor may cause intense watering and irritation to eyes.

Chronic Exposure:

Repeated or prolonged exposures may cause darkening of the skin, erosion of exposed front teeth, and chronic inflammation of the nose, throat, and bronchial tubes.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems, or impaired respiratory function may be more susceptible to the effects of this substance.

B. FIRST AID

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Exposure:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician.

Eye Exposure:

Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1986)

Oral rat LD50: 3310 mg/kg. Dermal rabbit LD50: 1.06g/Kg. Mutation references cited.

SECTION 6 Occupational Control Measures

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):
10 ppm (TWA).
- ACGIH Threshold Limit Value (TLV):
10 ppm (TWA); 15 ppm (STEL).

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators: (NIOSH Approved)

If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 7 Storage and Special Information

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances.

ALGIA

Mallinckrodt

Material Safety Data

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Emergency Phone Number: 314-539-1600

Mallinckrodt, Inc., Science Products Division, P.O. Box 800, Paris, KY 40362.

Addendum to Material Safety Data Sheet

REGULATORY STATUS

Hazard Categories for SARA

Section 311/312 Reporting

Acute Chronic Fire Pressure Reactive

X X X X

Chem.Key: ALGLA)

Product or Components
Product:

ACETIC ACID GLACIAL (64-19-7)

SARA EHS Sect. 302
RQ (lbs.) TPQ (lbs.)

No No

SARA Section 313 Chemicals
Name List Chemical Category

No No

CERCLA Sec 103
RQ (lbs.)

5000

RCRA
Sec. 261.33

No

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802), Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

Effective Date: 87 Supersedes 09-26-85

ACETIC ACID GLACIAL

PORTS MSDS #: 5711

PRODUCT: ACETONE

PART NUMBER:

FORMULA: CH₃COCH₃

KEYWORD: SOLVENT

PORTS NUMBER: 66-001-0500; 660010500; 66-001-6006

PORTS MISC INFO:

LAB MSDS# 167

LAB MSDS# 43

PORTS RATING: HFR=241

MANUFACTURER:

E M INDUSTRIES, INC., E M SCIENCE DIV.

P.O. BOX 70, 480 DEMOCRAT RD.

GIBBSTOWN

NJ

08027

PHONE: PHONE: 609-354-9200

EMERGENCY PHONE: 800-424-9300

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 132.8 F	NOTE: 760 MMHG, 56C.
Melting Point. . . . EQ -137.2 F	NOTE: -94C.
Freezing Point. . . . NG	
Cur Point. NG	
Softening Point. . . NG	
Specific Gravity . . EQ .7905	
Vapor Pressure . . . EQ 184	NOTE: MM HG AT 20C.
Vapor Density. . . . EQ 2.0	
Percent Volatiles. . GT 99.9	
Evaporation Rate . . EQ 14.48	NOTE: BUAC = 1.
pH NG	
Molecular Weight . . EQ 58.08	
Viscosity. NG	
Solubility in Water. MISCIBLE.	
Odor/Appearance/Other Characteristics:	
COLORLESS LIQUID; PUNGENT ODOR.	

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ .0 F	NOTE: CC.
Flash Point, Open Cup . . . NG	
Fire Point. NG	
Auto Ignition. NG	
Explosive/Flammable Limits	
Lower (LEL). EQ 2.60	
Upper (UEL). EQ 12.80	

Shipping Regulations

UN/NA Number. UN1090
D.O.T. Hazard Class. . . NG
Label NOT GIVEN
Proper Shipping Name . . ACETONE

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 11/07/94

=== Component Information =====

ACETONE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1800
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1780
STEL (PPM):
STEL (MG/M3): 2400
Product %: ~ 100
C.A.S. No.: 67641

Note:

PEL & TLV: 750 PPM / OSHA STEL: 1000 PPM / ACGIH STEL:

BENZENE

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: LT .002
C.A.S. No.: 71432

===== CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

| SEE OTHER INFORMATION SECTION.

PRODUCT NAME: ACETONE

SYNONYMS: DIMETHYL KETONE, 2-PROPANONE

CHEMICAL FAMILY: KETONE

CATALOG NUMBER(S):

AX0110; AX0115; AX0115P; AX0116; AX0118; AX0120;
AX0120P; AX0120S; AX0120T; AX0125; AX0126

MOLECULAR WEIGHT: 58.08

FORMULA: CH₃COCH₃

PREPARATION DATE: 11/07/94

DATE MSDS PRINTED: Mar 06, 1995

INFORMATION PHONE NUMBER: 609-354-9200

HOURS: MON. TO FRI. 8:30 - 5

CHEMTREC EMERGENCY NUMBER: 800-424-9300

HOURS: 24 HRS A DAY

MANUFACTURER'S NAME AND ADDRESS:

EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

===== COMPOSITION/INFORMATION ON INGREDIENTS =====

E COMPONENT INFORMATION.

ACETONE MAY CONTAIN TRACE AMOUNT OF BENZENE (LESS THAN 0.002%).
BENZENE
(CAS# 71-43-2) HAS BEEN FOUND TO CAUSE CANCER. NOTIFICATION OF
CARCINOGENIC
INGREDIENTS IN QUANTITY LESS THAN 0.1% IS NOT REQUIRED UNDER
FEDERAL HAZARD
COMMUNICATION LAW.

===== HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW: EXTREMELY FLAMMABLE LIQUID AND VAPORS.

HARMFUL IF INHALED OR SWALLOWED.
CAUSES EYE IRRITATION.
MAY CAUSE DAMAGE TO CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.
CHRONIC EXPOSURE DURING PREGNANCY MAY BE HARMFUL.

APPEARANCE: COLORLESS LIQUID; PUNGENT ODOR

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC):

SYMPTOMS OF EXPOSURE: HARMFUL IF INHALED OR SWALLOWED.

HIGH CONCENTRATIONS OR PROLONGED EXPOSURE CAUSES HEADACHE,
DIZZINESS,
NAUSEA, IRRITATION OF EYES AND RESPIRATORY TRACT, NARCOSIS AND
EVENTUALLY
UNCONSCIOUSNESS.

MAY CAUSE DAMAGE TO CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.

PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE IRRITATION.

EYE CONTACT CAUSES IRRITATION.

ANIMAL STUDIES SHOW ADVERSE EFFECTS ON FERTILITY WHEN FEMALES
WERE
EXPOSED CHRONICALLY DURING PREGNANCY.

MEDICAL COND. AGGRAVATED BY EXPOSURE: SKIN CONDITIONS, PREGNANCY.

ROUTES OF ENTRY: INHALATION, INGESTION OR SKIN CONTACT.

CARCINOGENICITY: THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS
CANCER
CAUSING AGENT.

MAY CONTAIN TRACE AMOUNT OF BENZENE (SEE
COMPOSITION/INFORMATION ON
INGREDIENTS SECTION).

===== FIRST AID MEASURES =====

EMERGENCY FIRST AID: GET MEDICAL ASSISTANCE FOR ALL CASES OF
OVEREXPOSURE.

SKIN: WASH THOROUGHLY WITH SOAP AND WATER.

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15
MINUTES.

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF
BREATHING

HAS STOPPED.

INGESTION: IF CONSCIOUS, DRINK WATER AND INDUCE VOMITING
IMMEDIATELY AS
DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN
UNCONSCIOUS
PERSON.

REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

===== FIRE FIGHTING MEASURES =====

FLASH POINT (F): 0F (CC)

FLAMMABLE LIMITS LEL (%): 2.60

FLAMMABLE LIMITS UEL (%): 12.80

EXTINGUISHING MEDIA: DRY CHEMICAL, "ALCOHOL" FOAM, WATER SPRAY,
CO2.

USE WATER SPRAY TO COOL EXPOSED CONTAINERS.

FIRE FIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS.

FIRE & EXPLOSION HAZARDS: DANGEROUS FIRE AND EXPLOSIVE HAZARD.
VAPOR CAN
TRAVEL DISTANCES TO IGNITION SOURCE AND FLASH BACK. HOT ORGANIC
CHEMICAL
VAPORS OR MISTS ARE SUSCEPTIBLE TO SUDDEN SPONTANEOUS COMBUSTION
WHEN MIXED
WITH AIR. IGNITION MAY OCCUR AT TEMPERATURES BELOW PUBLISHED
AUTOIGNITION OR
IGNITION TEMPERATURES. IGNITION TEMPERATURES DECREASE WITH
INCREASING VAPOR
VOLUME AND VAPOR/AIR CONTACT TIME AND ARE INFLUENCED BY PRESSURE
CHANGES.
IGNITION MAY OCCUR AT TYPICAL ELEVATED TEMPERATURE PROCESS
CONDITIONS,
ESPECIALLY IN PROCESS OPERATING UNDER VACUUM IF SUBJECTED TO SUDDEN
INGRESS
OF AIR, OR OUTSIDE PROCESS EQUIPMENT OPERATING UNDER ELEVATED
PRESSURE IF
SUDDEN ESCAPE OF VAPORS OR MISTS TO THE ATMOSPHERE OCCURS.

===== ACCIDENTAL RELEASE MEASURES =====

SPILL RESPONSE:

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.

WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE
CONTROLS/PERSONAL
PROTECTION SECTION.

ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE
FREE FROM
EXPLOSION OR FIRE HAZARDS.

CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE
WITHOUT
RISK.

TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER
DISPOSAL
CONSIDERATIONS SECTION.

COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS ON REPORTING

RELEASES.

REFER TO REGULATORY INFORMATION SECTION FOR REPORTABLE QUANTITY AND
HER
GULATORY DATA.

EM SCIENCE RECOMMENDS SPILL-X ABSORBENT AGENTS FOR VARIOUS TYPES
OF SPILLS.

ADDITIONAL INFORMATION ON THE SPILL-X PRODUCTS CAN BE PROVIDED
THROUGH THE EM
SCIENCE TECHNICAL SERVICE DEPARTMENT (609) 354-9200.

THE FOLLOWING EM SCIENCE SPILL-X ABSORBENT IS RECOMMENDED FOR
THIS PRODUCT:

SX0963 SOLVENT SPILL TREATMENT KIT.

===== HANDLING AND STORAGE =====

HANDLING & STORAGE:

KEEP CONTAINER CLOSED.
STORE IN A COOL AREA AWAY FROM IGNITION SOURCES AND OXIDIZERS.
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES.
AVOID PROLONGED OR REPEATED SKIN CONTACT.
ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT.
RETAIN RESIDUE MAY MAKE EMPTY CONTAINERS HAZARDOUS; USE CAUTION!

===== EXPOSURE CONTROLS/PERSONAL PROTECTION =====

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE
PROTECTION
RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT
OR ANY
COMPONENT IS EXCEEDED (SEE TLV/PEL), A NIOSH/MSHA APPROVED AIR
SUPPLIED
RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.
OSHA
REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE
PRESSURE TYPE)
UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER).
ENGINEERING
AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE
EXPOSURE.

MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME
HOOD OR WITH
ADEQUATE VENTILATION.

PROTECTIVE GLOVES (BUTYL RUBBER, CPE, POLYURETHANE OR EQUIVALENT)
SHOULD
BE WORN TO PREVENT SKIN CONTACT.

SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES.

WORK/HYGIENIC PRACTICES:

WASH THOROUGHLY AFTER HANDLING.
DO NOT TAKE INTERNALLY.
EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES:

OSHA PEL:

TWA

STEL

CL

COMPONENT MG/M3 SKIN	PPM	MG/M3	PPM	MG/M3	PPM
ACETONE	750	1800	1000	2400	

ACGIH - TLV:

COMPONENT MG/M3 SKIN	PPM	TWA MG/M3	STEL PPM	MG/M3	CL PPM
ACETONE	750	1780	1000	2380	

===== PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== STABILITY AND REACTIVITY =====

STABILITY: YES

HAZARDOUS POLYMERIZATION: DOES NOT OCCUR.

HAZARDOUS DECOMPOSITION: COX.

CONDITIONS TO AVOID: HEAT, CONTACT WITH IGNITION SOURCE.

MATERIALS TO AVOID: ACIDS, OXIDIZERS.

OTHER: POTASSIUM T-BUTOXIDE; NITRIC AND SULFURIC ACID MIXTURE,
BROMINE,
CHLORINE.

===== TOXICOLOGICAL INFORMATION =====

TOXICITY DATA:

ORL-MUS LD50: 3000 MG/KG.
ORL-RAT LD50: 5800 MG/KG.
IHL-HMN TCLO: 500 PPM.TOXICOLOGICAL FINDINGS: TESTS ON LABORATORY ANIMALS INDICATE
MATERIAL MAY
PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS. CITED IN
REGISTRY OF
TOXIC EFFECTS ON SUBSTANCES (RTECS).

===== DISPOSAL CONSIDERATIONS =====

EPA WASTE NUMBERS: U002, D001.

TREATMENT:

SPECIFIED TECHNOLOGY: INCINERATION TO A LEVEL BELOW TCA (TOTAL
CONSTITUENT
ANALYSES) LEVELS. CONTACT YOUR LOCAL PERMITTED WASTE DISPOSAL
COMPANY (TSD)
FOR PERMISSIBLE TREATMENT SITE. ALWAYS CONTACT A PERMITTED WASTE
DISPOSER
(TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND
FEDERAL
REGULATIONS.

===== TRANSPORT INFORMATION =====

DOT PROPER SHIPPING NAME: ACETONE

T ID NUMBER: UN 1090

===== REGULATORY INFORMATION =====

TSCA STATEMENT: THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE
TSCA
INVENTORY.

CERCLA	SARA	SARA	
COMPONENT	EHS	EHS TPQ	RQ
(LBS)	(302)	(LBS)	

ACETONE
5000

MINIMIS	OSHA	SARA	DE
COMPONENT	FLOOR LIST	313	FOR SARA
313 (%)			

ACETONE
1.0

Y

Y

===== OTHER INFORMATION =====

COMMENTS: NONE

FPA HAZARD RATINGS:

HEALTH: 1
FLAMMABILITY: 3
REACTIVITY: 0
SPECIAL HAZARDS:

REVISION HISTORY:

08/26/81; 07/01/83; 06/01/84; 06/01/85; 09/12/86; 06/05/87;
08/28/87;
10/27/87; 03/21/89; 10/06/89; 05/01/90; 05/11/90; 03/01/91;
12/01/92

| : REVISED SECTION
N/A: NOT AVAILABLE
N/E: NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL
PURPOSES ONLY
AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE
ACCURATE.
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44-16-6690
44-16-6700

66-01-0465
44-01-0080

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
120 ERIE BOULEVARD
SCHENECTADY, N.Y. 12305

MATERIALS
SERVICES
INFORMATION

NO. 403

ACETYLENE
Revision A

DATE July 1984

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: ACETYLENE

DESCRIPTION: Gas obtained from reaction of calcium carbide with water in an acetylene generator or from approved pressurized cylinders packed with porous solid and acetone.

OTHER DESIGNATIONS: Ethyne, C_2H_2 , GE Material D27A16, CAS #000 074 862

MANUFACTURER: Available from many suppliers, including:

Union Carbide Corp, Linde Div.
308 Harper Drive
Moorestown, NJ 08057

Air Products & Chem., Inc.
Box 538 - Allentown, PA 18105
Tel: (609) 778-6200 Tel: (215) 481 4911

SECTION II. INGREDIENTS AND HAZARDS

Acetylene gas Typical Impurities*	Generated Gas	Cylinder Gas	%	HAZARD DATA
Carbon dioxide	<1.0%	<1.0%	>98	Simple asphyxiant** NIOSH has proposed a 10-hr TWA of 2500 ppm because of toxic trace impurities.
Nitrogen	<1.0	<1.0		
Oxygen	<0.2	<0.2		
Phosphine	0.018	0.00025		
Hydrogen sulfide	0.004	0.0007		
Arsine	>0.003	-		
Ammonia	0.015	-		

*Acetone (an impurity in cylinder gas) and water excluded.
Impurity content should be determined from the supplier
of the calcium carbide or the cylinder.

**ACGIH (1983) TLV for a simple asphyxiant gas is 18 Vol %
min. O_2 content in air at 1 atm.

SECTION III. PHYSICAL DATA

Boiling pt at 10 psig, deg C	----- -75	Critical temperature, deg C	----- 36
Specific gravity, 1 atm (Air=1)	----- 0.91	Molecular weight	----- 26.04
Water solubility, Vol/Vol at 1 atm:			
0 C	----- 1.7		
15 C	----- 1.1		

Appearance & Odor: Colorless, odorless gas when pure. Most commercial grades have
garlic-like odor from impurities.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
Gaseous at room temp.	>290C; 305C @ 30%*	Volume % in air	2.5 3	81 65

Extinguish fire by shutting off source of acetylene. Fires from small leaks in containers
can be extinguished by plugging leak with wet waste or putty or smothering with a heavy
cloth. When fire involves the inner cylinder, it must be handled by an experienced
firefighter. Use water spray to cool fire-exposed cylinders. Cylinder safety fuse melts
at 100C and releases gas.

Those involved in fighting acetylene fires need self-contained breathing apparatus.

See Compressed Gas Assoc, SB4, "Handling Acetylene Cylinders in Fire Situations"

*Composition, pressure, moisture content and initial temp. varies the AIT.

SECTION V. REACTIVITY DATA

In its free state under pressure acetylene can decompose violently when heated or shocked
to form carbon and hydrogen (no oxygen required). Pressures in excess of 15 psig should
never be used for free acetylene without special engineering design. Below 15 psig or
in acetone solution in its cylinder acetylene is stable. Only approved valves and mani-
folds should be used.

It burns in air with an intensely hot (>5400F) sooty flame.

It reacts with copper, silver and mercury to form explosive acetylides. Incomplete
combustion of acetylene can form carbon monoxide in high levels.

Acetylene can react explosively with oxygen, chlorine or fluorine on exposure to sunlight.

Do not use in liquified or solidified form!

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GENERAL ELECTRIC

17 = 1 JSM
3/5/84

Safety

Item 4 AB 1-15-86
R-3, RWH 11/15/86

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect II)
<p>Acetylene, when pure, is a simple asphyxiant and an anesthetic, nonirritating to skin or mucous membranes. No symptoms occur from the presence of 2.5% acetylene in air (the LEL); at 10-20% a reversible narcosis can be produced; at 35%, (5 minute exposure), collapse can occur from oxygen deficiency. Contaminants in acetylene, particularly in that generated on site from calcium carbide, can have toxic effects, phosphine for example.</p> <p>In a welding process involving acetylene, metal oxide fume and carbon monoxide may present additional health hazards when acetylene is present in the air.</p> <p>FIRST AID: <u>Caution!</u> Rescuers may be entering oxygen-deficient and explosion hazard area.</p> <p><u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed. If victim unconscious, give prompt O_2 therapy. Keep warm and at rest. Contact a physician. If acetylene from a calcium carbide generator is involved, the acute effects of phosphine and other impurities in the acetylene should be considered.</p>	
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES	
<p><u>Notify safety personnel!</u> Provide maximum explosion-proof ventilation. Eliminate ignition sources. Evacuate non-essential personnel. Emergency personnel need protection against simple asphyxiation. Shut off flow if possible. Small gas leaks can be detected by painting suspected area with a soapy water solution and check for bubble formation.</p> <p>Stop leak with wet waste heavy cloth, putty, mud, etc.</p> <p><u>DISPOSAL:</u> Remove leaking cylinders outdoors to a safe discharge area. (Posted) Allow gas to discharge at a moderate rate. When empty close valve; return to supplier marked defective. Follow Federal, State and Local regulations.</p>	
SECTION VIII. SPECIAL PROTECTION INFORMATION	
<p>Provide general ventilation and/or local exhaust ventilation (explosion-proof) to keep acetylene concentration below 2500 ppm in the workplace air. This level will control explosion hazards as well as exposure to impurities in the acetylene gas.</p> <p>Avoid use of acetylene in confined or enclosed areas to prevent oxygen deficient atmospheres (18 Vol % O_2 minimum). Provide NIOSH approved air-supplied or self-contained breathing apparatus for emergency or nonroutine situation to protect against anesthetic or asphyxiating levels (Caution! Concentration of gas in this situation also presents an explosion hazard. Risk may be too great to justify entry.)</p> <p>Use handling cylinders should wear leather gloves, safety shoes and safety goggles.</p>	
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS	
<p>Obtain and follow the detailed safety regulations of OSHA [Code of Federal Regulations 29, Chapter VXII, Part 1910.252 (a)] and the recommendations of suppliers for handling, manifolding, and storage of pressurized gas cylinders and the operation of acetylene generators. Periodically check valves for leaks.</p> <p>Store reserve cylinders away from cylinders of oxygen (and from chlorine and other oxidizing agents) in an upright position. Store in a cool, well-ventilated place away from open flames and other ignition sources. Do not smoke in areas of storage or use.</p> <p>Protect cylinders, manifolds and piping from physical damage. Piping used with acetylene must be compatible and be electrically bonded and grounded to prevent static sparks.</p> <p>DOT Classification: FLAMMABLE GAS I.D. No. UN1001 Label: FLAMMABLE GAS</p> <p>DATA SOURCE(S) CODE: 1-12, 14, 17, 23-25, 37, 43, 49, 51</p>	
<p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<p>APPROVALS: MIS/CRD <i>J.M. Nissen</i></p> <p>INDUST. HYGIENE/SAFETY <i>RM: 6-24-84</i></p> <p>MEDICAL REVIEW: 6 July 1984</p>

PORTS MSDS #: 238

PRODUCT: STANDARD, AMMONIA AS N, 1000PPM N

PART NUMBER: LC-17940-1

FORMULA:

KEYWORD: STANDARD

PORTS NUMBER: 66040995-500

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=000

MANUFACTURER:
LABCHEM INC.
200 WILLIAM PITT WAY
PITTSBURGH
PA

15238

PHONE: PHONE: 412-826-5230

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 212 F
Melting Point. . . . EQ 32 F
Freezing Point . . . NG
Pour Point NG
Softening Point. . . NG

Specific Gravity . . . EQ 1.0

Vapor Pressure . . . EQ 14

Vapor Density. . . . EQ .7

Percent Volatiles. . NG

Evaporation Rate . . LT 1

pH NA

Molecular Weight . . NG

Viscosity. NG

Solubility in Water. SOLUBLE.

Odor/Appearance/Other Characteristics:

CLEAR COLORLESS LIQUID, ODORLESS.

NOTE: MM HG @ 20'C (H2O).

NOTE: H2O.

NOTE: ETHER=1.

NOTE: NOT APPLI/NOT AVAIL.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . N*

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

Explosive/Flammable Limits

Lower (LEL). NA

Upper (UEL). NA

NOTE: NON-FLAMMABLE.

NOTE: NOT APPLI/NOT AVAIL.

NOTE: NOT APPLI/NOT AVAIL.

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. . . . NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: AL BERANEK 412-826-5230

Date Prepared/Revised 11/26/90

===== Component Information =====

AMMONIUM CHLORIDE

OSHA PEL (PPM): NA
OSHA PEL (MG/M3):
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 10
STEL (PPM):
STEL (MG/M3): 20
Product %: EQ .38
C.A.S. No.: 12125029

Note:

PEL: NOT APPLICABLE OR DATA NOT AVAILABLE / TLV & STEL:

WATER

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 99.6
C.A.S. No.: 7732185

===== IDENTIFICATION =====

PRODUCT NAME: NITROGEN (AMMONIA) STANDARD, 1ml=1ml N = 1.22 mg NH3

Cat # 1794

ATERIAL SAFETY DATA SHEET # 113

REVISED: 11/26/90

CONTACT: Al Beranek

PHONE: (412) 826-5230

MANUFACTURER'S NAME AND ADDRESS:

LABCHEM INC.
200 WILLIAM PITT WAY
PITTSBURGH, PA 15238

===== HAZARDOUS INGREDIENTS/IDENTITY INFORMATION =====

SEE COMPONENT INFORMATION.

NAME: NITROGEN (AMMONIA) STANDARD, 1ml=1mg N = 1.22mg NH3

SYN: Nitrogen reference solution

COMPONENTS:	CAS:	FORMULA/F.WT.
(1) ammonium chloride, 0.38%	12125-02-9	NH4Cl / 53.49
(2) water, 99.6%	7732-18-5	H2O / 18.00

CERCLA RATING(0-3): Health - Fire - Reactivity - Persistence - n/a

NFPA RATING (0-4): Health - Fire - Reactivity - n/a

===== PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

=== FIRE AND EXPLOSION HAZARD DATA =====

FLASH PT.: Non-flammable

EXPLOSION LEVEL:

LOWER (LEL): N/a

UPPER (UEL): N/a

AUTOIGNITION: N/a

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, water spray or foam.

FIREFIGHTING: No acute hazard. Negligible fire hazard when exposed to heat or flame. Move container if possible, avoid breathing dusts or vapors.

===== REACTIVITY DATA =====

STABILITY: Stable under normal temperatures and pressures up to boiling point (212F).

CONDITIONS TO AVOID: Incompatibilities - water reactive substances (oleum, sodium). Ammonium chloride in sufficient concentrations react violently or explosively with bromine trifluoride, iodine heptafluoride, potassium perchlorate, ammonium nitrate.

HAZARDOUS DECOMPOSITION/BYPRODUCTS: This solution presents negligible hazard from thermal decomposition. Ammonium chloride sublimes unchanged at 644F (340C).

HAZARDOUS POLYMERIZATION: Not known to occur.

===== HEALTH HAZARD DATA =====

TOXICITY: No toxic effects anticipated at this concentration of ammonium chloride. Ammonium chloride salt is a mild respiratory and skin irritant, a severe eye irritant.

LDLO: 78 mg/Kg IV-rabbit; 500mg/Kg SubC-mouse.

LD50: 485mg/Kg IP-mouse; 30mg/Kg IM-rat; 1000mg/Kg Oral - rabbit; 1650 mg/Kg Oral-rat.

CARCINOGENICITY: None reported.

EXPOSURE LIMITS: (For ammonium chloride, as fume)

OSHA-PEL: N/a

ACGIH-TWA: 10mg/m3

-STEL: 20mg/m3

TLV CEILING: N/a

IDLH: N/a

OTHER: N/a

ACUTE HEALTH HAZARDS: No health hazards reported for this solution. Ammonium

chloride salts may irritate the nose, throat, mouth and respiratory tract and
cause wheezing, chest pain, and delayed pulmonary edema. Skin and eye contact
may produce redness and irritation. Ingestion of ammonium salts may produce
nausea, vomiting, gastric irritation - over 6 grams may cause systemic
ammonia toxicity (heavy breathing, blue skin, dullness/-restlessness,
convulsions, coma). Persons with liver or kidney impairment are at increased
risk.

CHRONIC HEALTH HAZARDS: Dermatitis, conjunctivitis may occur.
Ammonium chloride at this concentration should not present a significant health hazard.

FIRST AID:

INHALATION: Move victim to fresh air, give artificial respiration if necessary. Maintain airway, medical personnel may give oxygen and treat for pulmonary edema. Keep victim warm, at rest. Get medical aid immediately.

SKIN: Remove contaminated clothing, wash area with soap and water. Flush with large amounts of water (15-20min) until chemical is gone. Get medical aid.

EYES: Flush with large amounts of water (15-20min) lifting upper/lower lids occasionally until chemical is gone. Get medical aid at once.

INGESTION: Give conscious victim 2-4 glasses of water, induce vomiting (touch finger to back of throat). Get medical aid at once.

===== PRECAUTIONS FOR SAFE HANDLING AND USE =====

SPILLS OR LEAKS: Absorb with sand, diatomaceous earth, activated charcoal, or other suitable absorbent. Scoop into container and label for disposal. Spill may be chemically neutralized to pH 7.

DISPOSAL: Dispose in accordance with Federal, State, and local laws.

STORAGE AND HANDLING: Store capped in virgin linear polyethylene or equivalent plastic container at room temperature protected from heat and water reactive materials (oleum, sodium).

===== CONTROL MEASURES =====

RESPIRATORY PROTECTION: Not required for laboratory use of this solution.
Respirators not required for laboratory.

PROTECTIVE CLOTHING AND EQUIPMENT: Gloves are recommended where repeated and

prolonged contact occurs. Wear splash-proof goggles. Do not wear.
contact
uses when working with chemicals.

===== SPECIAL NOTES =====

Information in this MSDS is from available published sources and is
believed
to be accurate. No warranty, express or implied, is made and
LabChem Inc.
assumes no liability resulting from the use of this MSDS. The user
must
determine suitability of this information for his application.

NOTE:

N/A: Means "not applicable" or data "not available".

MSDS for AMMONIUM CITRATE, DIBASIC

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1 - PRODUCT IDENTIFICATION

PRODUCT NAME: AMMONIUM CITRATE, DIBASIC
 FORMULA: $(\text{NH}_4)_2\text{HC}_6\text{H}_5\text{O}_7$
 FORMULA WT: 226.19
 CAS NO.: 3012-65-5
 COMMON SYNONYMS: DIAMMONIUM HYDROGEN CITRATE; DIAMMONIUM CITRATE; CITRIC ACID
 DIAMMONIUM SALT
 PRODUCT CODES: 5310,0682
 EFFECTIVE: 05/08/86
 REVISION #01

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 1 SLIGHT
 FLAMMABILITY - 1 SLIGHT
 REACTIVITY - 0 NONE
 CONTACT - 1 SLIGHT

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT

PRECAUTIONARY LABEL STATEMENTS

CAUTION
 MAY CAUSE IRRITATION

DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT

%

CAS NO.

CAS# 3012-65-5
 Ammonium Citrate

NOT APPLICABLE

3 - PHYSICAL DATA

BOILING POINT:	N/A	VAPOR PRESSURE(MM HG):	N/A
MELTING POINT:	N/A	VAPOR DENSITY(AIR=1):	1.8
SPECIFIC GRAVITY:	1.48	EVAPORATION RATE:	N/A
(H2O=1)		(BUTYL ACETATE=1)	

MSDS for AMMONIUM CITRATE, DIBASIC Page 2

SOLUBILITY(H2O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: 0

APPEARANCE & ODOR: WHITE GRANULES OR CRYSTALS.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP: N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE EXPOSED CONTAINERS FROM FIRE AREA, IF IT CAN BE DONE WITHOUT RISK.

USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE.

TOXIC GASES PRODUCED

AMMONIA, CARBON MONOXIDE, CARBON DIOXIDE

5 - HEALTH HAZARD DATA

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

CONTACT MAY CAUSE IRRITATION OF SKIN, EYES, AND MUCOUS MEMBRANES.

TARGET ORGANS

NONE IDENTIFIED

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

NONE IDENTIFIED

ROUTES OF ENTRY

NONE INDICATED

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE
LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: IF A PERSON BREATHE IN LARGE AMOUNTS, MOVE THE EXPOSED
PERSON TO FRESH AIR. GET MEDICAL ATTENTION.

EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15
MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST
15 MINUTES.

MSDS for AMMONIUM CITRATE, DIBASIC

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6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE DOCUMENTED

DECOMPOSITION PRODUCTS: AMMONIA, CARBON MONOXIDE, CARBON DIOXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME	AMMONIUM CITRATE, DIBASIC
HAZARD CLASS	ORM-E
LABELS	NONE
REPORTABLE QUANTITY	5000 LBS.

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

PORTS MSDS #: 346

PRODUCT: STANDARD, ARSENIC 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: As

KEYWORD: STANDARD

PORTS NUMBER: 00190040-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH03109
PHONE: PHONE: 603-622-7660
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point.	~ 212 F	NOTE: ~100'C.
Melting Point.	~ 32 F	NOTE: ~0'C.
Freezing Point.	NG	
Pour Point.	NG	
Softening Point.	NG	
Specific Gravity.	~ 1	
Vapor Pressure.	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density.	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles.	~ 99	NOTE: @ 21'C.
Evaporation Rate.	NA	NOTE: NOT APPLI/NOT AVAIL.
pH.	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight.	EQ 74.92	NOTE: FORMULA WT.
Viscosity.	NG	
Solubility in Water. COMPLETE (100%).		
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD:		NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup.	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup.	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number.	NG
D.O.T. Hazard Class.	NG
Label.	NOT GIVEN
Proper Shipping Name.	CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 1/18/93

===== Component Information =====

ARSENIC

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.01
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.2
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 1.0
C.A.S. No.: 7440382

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3):
Product %: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Arsenic Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: As

FORMULA WT.: 74.92

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/18/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES

180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid

TOXICITY OF COMPONENTS:

ORAL RAT LD50 FOR ARSENIC: 15.1 mg/kg

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: Yes IARC: Yes Z LIST: Yes OSHA REG: Yes

RCINOGENICITY: This product contains Arsenic, which is listed as a NTP human carcinogen and an IARC human carcinogen (Group 1).

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system, severe irritation or burns of respiratory system, pulmonary edema, lung inflammation

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, may be fatal nausea, vomiting, kidney dysfunction, paralysis

CHRONIC EFFECTS: None identified

TARGET ORGANS: Liver, kidneys, respiratory system, lungs, eyes, skin, teeth, lymphatic system

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None identified

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, and the victim is conscious, give large amounts of milk, milk of magnesia or whites of eggs beaten with H2O and induce vomiting.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Arsenic (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Arsenic and Nitric Acid

TSCA INVENTORY: Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, THE STATE REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

===== SECTION VI - REACTIVITY DATA =====

ABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Suitable for any general chemical storage area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHГ cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHГ warrants that the chemical meets the specifications set forth on the label.

VHГ DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

PORTS MSDS #: 342

PRODUCT: STANDARD, BARIUM 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Ba

KEYWORD: STANDARD

PORTS NUMBER: 00190036-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH

03109
PHONE: 603-622-7660
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point	~ 212 F	NOTE: ~100'C.
Melting Point	~ 32 F	NOTE: ~0'C.
Freezing Point	NG	
Pour Point	NG	
Softening Point	NG	
Specific Gravity	~ 1	
Vapor Pressure	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles	~ 98	NOTE: @ 21'C.
Evaporation Rate	NA	NOTE: NOT APPLI/NOT AVAIL.
pH	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight	EQ 137.33	NOTE: FORMULA WT.
Viscosity	NG	
Solubility in Water	COMPLETE (100%).	
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup . . .	NG	
Fire Point	NG	
Auto Ignition	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL)	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL)	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number NG
D.O.T. Hazard Class . . . NG
Label NOT GIVEN
Proper Shipping Name . . . CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/18/93

===== Component Information =====

BARIUM NITRATE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.5
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.9
C.A.S. No.: 10022318

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Barium Plasma Emission Standards - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Ba

FORMULA WT.: 137.33

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/18/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES

180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

ORAL RAT LD50 FOR BARIUM NITRATE: 355 mg/kg

INTRAVENOUS MOUSE LD50 FOR BARIUM NITRATE: 8.5 mg/kg

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

RCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, kidney dysfunction

CHRONIC EFFECTS: None identified

TARGET ORGANS: Respiratory system, eyes, skin, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If conscious, give water, milk, or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Nitric Acid

TSCA INVENTORY: Yes

==== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

=== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label. VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

http://jupiter.ports/msds/data/342
Approved by Quality Assurance Department.

http://jupiter.ports/msds/data/

PORTS MSDS #: 5505

PRODUCT: BENZENE

PART NUMBER:

FORMULA: C6H6

KEYWORD: SOLVENT

PORTS NUMBER: NNN

PORTS MISC INFO:

01-02-1000

PORTS RATING: HFR=430

MANUFACTURER:

AMERICAN BURDICK & JACKSON

1953 SOUTH HARVEY STREET

MUSKEGON

MI

49442

PHONE: 616-726-3171

EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F NOTE: 80'C, 760 MM HG.

Melting Point. . . . NG

Freezing Point. . . . EQ 41.9 F NOTE: 5.5'C.

Pour Point. . . . NG

Softening Point. . . . NG

Specific Gravity . . . EQ .879

NOTE: @ 20'C.

Vapor Pressure . . . EQ 74.6

NOTE: MM HG @ 20'C.

Vapor Density. . . . EQ 2.8

Percent Volatiles. . . ~ 100

Evaporation Rate . . . ~ 3

NOTE: BUAC=1.

pH NG

Molecular Weight . . EQ 78.11

Viscosity. NG

Solubility in Water. @ 25C 0.18%.

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC AROMATIC

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 12.2 F NOTE: -11'C, TCC.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 1043.6 F NOTE: 562'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.3

Upper (UEL). EQ 7.1

Shipping Regulations

UN/NA Number. UN1114

D.O.T. Hazard Class. . . FLAMMABLE LIQUID

Label NOT GIVEN

Proper Shipping Name . . BENZENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/88

===== Component Information =====

BENZENE

OSHA PEL (PPM): 1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 10
ACGIH TLV (MG/M3):
STEL (PPM): 25
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 71432

Note:

OSHA AND ACGIH STEL / NIOSH: 10 PPM, TLV CEILING: NOT

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

CHEMICAL NAME: Benzene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Benzol

CAS NO.: 71-43-2

EMERGENCY TELEPHONE NO.: 312/973-3600 (American Scientific Products)

HEMTREC TELEPHONE NO.: 800/424-9300

INFORMATION TELEPHONE NO.: 616/726-3171 (American Burdick & Jackson)

MANUFACTURER'S NAME AND ADDRESS:

AMERICAN BURDICK & JACKSON
SUBSIDIARY OF AMERICAN HOSPITAL SUPPLY CORPORATION
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

APPEARANCE AND ODOR: Clear, colorless liquid with a characteristic aromatic odor.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

E PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

BENZENE

CARCINOGEN

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

PEL-TWA - 1 ppm
PEL-STEL - 25 ppm

ACGIH:

TLV-TWA - 10 ppm
TLV-STEL - 25 ppm

NIOSH:

TLV-TWA - 10 ppm
TLV-C - Not Listed

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH 2,000 ppm

ODOR THRESHOLD:

NSC 2 ppm
NIOSH Not Listed
OHS 1.5-5 ppm

CARCINOGENIC, MUTAGENIC, TERATOGENIC DATA:

Human carcinogen (NTP, IARC, OSHA)
Suspect human carcinogen (ACGIH)
Mutagenic and teratogenic data (RTEC)
Animal carcinogen (IARC)

PRIMARY ROUTES OF ENTRY: Benzene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause dizziness, intoxication, excitement, headache, vomiting, delirium, drowsiness, and unconsciousness.

EYE CONTACT: Liquid and high vapor concentration can cause irritation, neuritis, atrophy, visual impairment, edema, and cataracts.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Can cause gastrointestinal tract discomfort.

EFFECTS OF OVEREXPOSURE: Benzene is a primary skin irritant, central nervous system depressant, bone marrow depressant, and leukemogen. Acute benzene exposure from inhalation or ingestion initially produces excitation and euphoria, followed by headache, drowsiness, dizziness, vomiting, delirium and unconsciousness. Respiratory irritation and pulmonary edema are possible. Severe exposure causes blurred vision, tremors, shallow and rapid respiration, ventricular fibrillation, paralysis, and convulsions. Liver and kidney damage may occur. Chronic exposure to benzene poses the most significant toxic effects. Symptoms are headache, anorexia, nervousness, weariness, anemia, pallor, bleeding under the skin and eyes, and reduced clotting ability. Bone marrow damage and leukemia may develop. Liver and kidney damage may occur.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with diseases of the heart, lung, kidney, liver, nervous system, or the blood, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

===== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel

from exposure to chemical vapors exceeding the PEL and to minimize fire hazards.

The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, polyvinyl alcohol, viton(R) or nitrile latex offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to benzene may require additional protective equipment.

STORAGE: Benzene should be protected from temperature extremes and direct sunlight. Proper storage of benzene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, benzene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

===== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.

WASTE DISPOSAL: Dispose of benzene as an EPA hazardous waste. Hazardous waste numbers: U019 (Ignitable, Toxic); D001 (Ignitable).

===== SPECIAL NOTES =====

KEY:

CA: Approximately

NA: Not applicable

C: Ceiling

PEL: Permissible Exposure Level

STEL: Short Term Exposure Level

TLV: Threshold Limit Value

TWA: Time Weighted Average

BuAc: Butyl Acetate

NSC: National Safety Council ("Fundamentals of Industrial Hygiene", 1983)

OHS: Occupational Health Services ("Hazardline")

AMERICAN BURDICK & JACKSON'S DISCLAIMER: "The information and recommendations presented herein are based on sources believed to be reliable as of the date hereof. American Burdick & Jackson makes no representation as to the completeness or accuracy thereof. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties not expressly set forth herein are made hereunder, whether express or implied by operation of law or otherwise, including, but not limited to any implied warranties of MERCHANTABILITY OR FITNESS. American Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or ADDITIONAL LIABILITY OR RESPONSIBILITY resulting from the use of, or reliance upon, this information."

CAS# 64742-48-9
Blanket Cleaning
Solvent

MULTIGRAPHICS -- BLANKET CLEANING SOLVENT-83-9-770005
MATERIAL SAFETY DATA SHEET
UN: 685000D020055
Manufacturer's CAGE: OFTL5
Part No. Indicator: A
Part Number/Trade Name: BLANKET CLEANING SOLVENT-83-9-770005

=====
General Information
=====

Item Name: CLEANING SOLVENT, LITHOGRAPHIC BLANKET/ROLLER
Company's Name: AM MULTIGRAPHICS
Company's Street: 1800 WEST CENTRAL ROAD
Company's City: MT. PROSPECT
Company's State: IL
Company's Country: US
Company's Zip Code: 60056
Company's Emerg Ph #: 708-5121/ EVEN 708-398-1900
Company's Info Ph #: 708-5121/ EVEN 708-398-1900
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01JUN89
Safety Data Review Date: 18SEP95
Supply Item Manager: CX
MSDS Serial Number: BTSBL
Hazard Characteristic Code: F5

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: PERCHLOROETHYLENE (TETRACHLOROETHYLENE) (SARA III)
Ingredient Sequence Number: 01
Percent: 25
NIOSH (RTECS) Number: KX3850000
CAS Number: 127-18-4
OSHA PEL: 100 PPM
ACGIH TLV: 25PPM/100, A3 STEL; 94
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ALIPHATIC HYDROCARBON
Ingredient Sequence Number: 02
Percent: 65-75
NIOSH (RTECS) Number: 1006236AH
CAS Number: 64742-48-9
OSHA PEL: 100 PPM
ACGIH TLV: 100 TWA, 200PPM STEL
Other Recommended Limit: SAME AS STOD SOLVENT

Proprietary: NO
Ingredient: VM&P NAPHTHA (LIGROINE)
Ingredient Sequence Number: 03
Percent: 5-10
NIOSH (RTECS) Number: OI6180000
CAS Number: 8032-32-4
OSHA PEL: 300 PPM
ACGIH TLV: 300 PPM; 9394
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: NAPHTHA, LIGHT AROMATIC
Ingredient Sequence Number: 04
Percent: 5-8
NIOSH (RTECS) Number: 1003693SN
CAS Number: 64742-95-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 100 PPM TWA
=====

Physical/Chemical Characteristics

=====

pearance And Odor: BLUE LIQUID, ODOR OF PERCHLOROETHYLENE
Boiling Point: 250F, 121C
Vapor Density (Air=1): 5.83
Specific Gravity: 0.97
Evaporation Rate And Ref: 1.4 (BU AC=1)
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: 100

=====

Fire and Explosion Hazard Data

=====

Flash Point: 108F, 42C
Flash Point Method: TCC
Lower Explosive Limit: 1.1
Upper Explosive Limit: 5.9
Extinguishing Media: CO2, FOAM, DRY CHEMICAL. DO NOT USE WATER, IT WILL SPREAD FIRE.
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD WEAR PROTECTIVE CLOTHING AND SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: CHLORINATED HYDROCARBONS INVOLVED IN FIRES CAN DECOMPOSE TO TOXIC HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

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Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): OPEN FLAMES, HOT SURFACES.
Materials To Avoid: STRONG OXIDIZING AGENTS, ACID OR BASES.
Hazardous Decomp Products: BURNING MAY PRODUCE CO, CO2, HYDROGEN CHLORIDE AND TRACES OF PHOSGENE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE

=====

Health Hazard Data

=====

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE-EYE: IRRITATION & LACRYMATON CAN OCCUR FROM PERCHLOROETHYLENE. SKIN: PROLONGED CONTACT MAY CAUSE DERMATITIS.
INHALATION: HAS NARCOTIC EFFECT. INGESTION: GI IRRITATION, IF ASPIRATED MAY BE RAPIDLY ABSORBED THROUGH LUNGS, RESULTING IN INJURY TO OTHER BODY SYSTEMS. TARGET ORGANS: SKIN, EYES, LUNGS, CNS, LIVER, KIDNEY.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: ANTICIPATED CARCINOGEN BY NTP.
Signs/Symptoms Of Overexp: INHALATION: LOSS OF COORDINATION, TREMORS OR NAUSEA, VOMITING.
Med Cond Aggravated By Exp: BLOOD PRESSURE, HEART, LIVER, KIDNEY OR PULMONARY PROBLEMS. NERVOUS CONDITIONS, EXCESSIVE OBESITY OR ALCOHOL CONSUMPTION PROBLEMS.
Emergency/First Aid Proc: EYE: IRRIGATE IMMEDIATELY W/WATER 10-15 MIN. MOVE TO FRESH AIR, IF NOT BREATHING, GIVE MOUTH TO MOUTH RESUSCITATION; IF BREATHING DIFFICULTY, GIVE OXYGEN, CALL PHYSICIAN. INGESTION: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION IMMEDIATELY.

=====

Precautions for Safe Handling and Use

=====

Steps If Matl Released/Spill: REMOVE PERSONNEL. ABSORB SPILLS WITH ABSORBENT MATERIAL OR RECOVER BY PUMPING.
Waste Disposal Method: DISPOSE OF WASTE SOLVENT AND ANY ABSORBENT IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DO NOT POUR INTO SEWER OR SEPTIC TANKS.
Precautions-Handling/Storing: STORE IN A COOL, DRY PLACE IN A SAFE AREA FOR CLASS II COMBUSTIBLE LIQUIDS. KEEP FROM REACH OF CHILDREN.
Other Precautions: FOR COMMERCIAL/INDUSTRIAL USE ONLY. DEPOSIT WIPING CLOTHES IN A SAFETY CONTAINER TO AVOID COMBUSTION. DO NOT REUSE CONTAINER.

=====

Control Measures

=====

Respiratory Protection: IF REQUIRED, AN APPROVED SELF-CONTAINED BREATHING APPARATUS.

Ventilation: LOCAL EXHAUST: ONLY IF 50% OF TLV IS EXCEEDED.

Protective Gloves: NITRILE NBR

Eye Protection: SAFETY GLASSES.

Other Protective Equipment: RUBBER APRON TO KEEP SOLVENT OFF CLOTHING.

Work Hygienic Practices: DO NOT EAT, DRINK OR SMOKE WHILE WORKING WITH THIS PRODUCT.

Suppl. Safety & Health Data: USE IN WELL VENTILATED AREA, AVOID CONTACT.

=====

Transportation Data

=====

Trans Data Review Date: 94206

DOT PSN Code: GJL

DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.

DOT Class: 3

DOT ID Number: UN1993

DOT Pack Group: III

DOT Label: FLAMMABLE LIQUID

IMO PSN Code: HIA

IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

IMO Regulations Page Number: 3345

IMO UN Number: 1993

IMO UN Class: 3.3

IATA PSN Code: MCA

IATA UN ID Number: 1993

IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *

IATA UN Class: 3

IATA Label: FLAMMABLE LIQUID

AFI PSN Code: MCA

AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.

FI Class: 3

FI ID Number: UN1993

AFI Pack Group: III

AFI Label: FLAMMABLE LIQUID

AFI Basic Pac Ref: 7-7

MMAC Code: NK

Additional Trans Data: PSN PER MFR

=====

Disposal Data

Label Data

=====

Label Required: YES

Technical Review Date: 25JUL94

Label Status: F

Common Name: BLANKET CLEANING SOLVENT-83-9-770005

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Moderate: X

Fire Hazard-Moderate: X

Reactivity Hazard-None: X

Special Hazard Precautions: FLAMMABLE LIQUID, CONTAINS NAPHTHA. KEEP AWAY FROM HEAT, SPARKS, AND FLAME. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. IN CASE OF FIRE, USE WATER FOG, FOAM, DRY CHEMICAL, OR CO2. CAUSES IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. AVOID PROLONGED INHALATION OF VAPORS. TARGET ORGANS-EYES, SKIN, CNS, LIVER AND KIDNEY. FIRST AID- INHALATION: REMOVE TO FRESH AIR, PROVIDE OXYGEN/CPR IF NEEDED. GET MEDICAL HELP. EYES: FLUSH WITH WATER FOR 15 MINUTES. IF IRRITATION PERSISTS CONSULT A PHYSICIAN. SKIN: WASH WITH SOAP AND WATER. INGESTION: DO NOT INDUCE VOMITING. GET MEDICAL HELP.

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: AM MULTIGRAPHICS

Label Street: 1800 WEST CENTRAL ROAD

=====

Label City: MT. PROSPECT

Label State: IL

Label Zip Code: 60056

Label Country: US

Label Emergency Number: 708-5121/ EVEN 708-398-1900

Year Procured: 1994

=====
URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

MSDS for BORIC ACID /Page 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: BORIC ACID
FORMULA: H_3BO_3
FORMULA WT: 61.83
CAS NO.: 10043-35-3
NIOSH/RTECS NO.: ED4550000
COMMON SYNONYMS: BORACIC ACID; ORTHOBORIC ACID; BOROFAX
PRODUCT CODES: 0084,5168,0090,0091,9820
EFFECTIVE: 10/03/86
REVISION #02

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH	-	2	MODERATE
FLAMMABILITY	-	0	NONE
REACTIVITY	-	0	NONE
CONTACT	-	2	MODERATE

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

WARNING

CAUSES IRRITATION

HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN

AVOID CONTACT WITH EYES, SKIN, CLOTHING.

AVOID BREATHING DUST. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS
-----CAS# 10043-35-3
Boric Acid

COMPONENT	CAS NO.
BORIC ACID	90-100 10043-35-3

3 - PHYSICAL DATA

BOILING POINT: N/A	VAPOR PRESSURE(MM HG): 15
MELTING POINT: 171 C (340 F)	VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: 1.44	EVAPORATION RATE: N/A

MSDS for BORIC ACID

Page 2

(H2O=1)

(BUTYL ACETATE=1)

SOLUBILITY(H2O): MODERATE (1 TO 10 %)	% VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: COLORLESS, ODORLESS SOLID.	

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP: N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

TOXIC GASES PRODUCED
OXIDES

5 - HEALTH HAZARD DATA

TOXICITY: LD50 (ORAL-RAT) (MG/KG) - 2660
 LD50 (SCU-RAT) (MG/KG) - 1400
 LD50 (IV-RAT) (MG/KG) - 1330

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

INGESTION IS HARMFUL AND MAY BE FATAL.
 DUST INHALATION, MAY CAUSE TIGHTNESS AND PAIN IN CHEST, COUGHING, AND
 DIFFICULTY IN BREATHING.
 CONTACT WITH SKIN OR EYES MAY CAUSE IRRITATION.
 PROLONGED EXPOSURE MAY CAUSE DERMATITIS.
 INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS,
 GASTROINTESTINAL IRRITATION.
 CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE KIDNEY AND/OR LIVER DAMAGE.

TARGET ORGANS

NONE IDENTIFIED

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

DAMAGED SKIN

ROUTES OF ENTRY

INGESTION, INHALATION, SKIN CONTACT, EYE CONTACT

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.

MSDS for BORIC ACID

Page 3

IF SWALLOWED, IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INDUCE VOMITING.
 IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL
 RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
 IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR
 AT LEAST 15 MINUTES.

6 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: MOISTURE, HEAT

INCOMPATIBLES: POTASSIUM METAL, WATER, STRONG BASES

DECOMPOSITION PRODUCTS: OXIDES

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND
COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL
ENVIRONMENTAL REGULATIONS.

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION
TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION
CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS
HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, UNIFORM, RUBBER
GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE
AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

MSDS for BORIC ACID

Page 4

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

PORTS MSDS #: 384

PRODUCT: STANDARD, CADMIUM 10PPM IN 10% NITRIC

PART NUMBER: SRM 3108

FORMULA: Cd: [Cd(NO3)2]: HNO3

KEYWORD: STANDARD

PORTS NUMBER: 00190049-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
NATIONAL INSTITUTE OF STANDARDS (NIST)GAITHERSBURG
MD20899
PHONE: 301-975-2019
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 172 F	NOTE: 78'C, DECOMPOSES.
Melting Point. . . .	~ -30 F	NOTE: -42'C.
Freezing Point . . .	NG	
Boiling Point	NG	
Softening Point. . .	NG	
Specific Gravity . .	EQ 1.4	NOTE: DENSITY: 1.504.
Vapor Pressure . . .	EQ 8.0	NOTE: MM @ 20'C.
Vapor Density. . . .	NG	
Percent Volatiles. .	~ 100	NOTE: 122'C.
Evaporation Rate . .	NG	
pH	NG	
Molecular Weight . .	EQ 63.02	
Viscosity.	NG	
Solubility in Water.	COMPLETE.	
Odor/Appearance/Other Characteristics:		
DATA FOR NITRIC ACID / A WHITE TO SLIGHTLY YELLOW LIQUID THAT.....SEE TEXT.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	N*	NOTE: NON FLAMMABLE.
Flash Point, Open Cup . . .	N*	NOTE: NON FLAMMABLE.
Fire Point.	NG	
Auto Ignition.	NA	
Explosive/Flammable Limits		
Lower (LEL).	NA	
Upper (UEL).	NA	

Shipping Regulations

UN/NA Number.	NA1760
D.O.T. Hazard Class. . .	CORROSIVE
Label	NOT GIVEN
Proper Shipping Name . .	NITRIC ACID

Preparer/Contact Information: CARMELITA S. DAVIS (301)975-6439

Date Prepared/Revised 5/01/90

===== Component Information =====

NITRIC ACID

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 10
C.A.S. No.: 7697372

Note:

TLV: 2 PPM.

CADMIUM

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.1
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product #: NG
C.A.S. No.: 7440439

Note:

TLV: DUST.

CADMIUM NITRATE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 2.10
C.A.S. No.: 10325947

Note:

COMPOUND FORMED IN SOLUTION.

===== SECTION I. MATERIAL IDENTIFICATION =====

MATERIAL NAME: Cadmium Spectrometric Standard Solution

DESCRIPTION/OTHER DESIGNATIONS: Cadmium in Nitric Acid (aqua fortis, engraver's acid, azotic acid) Solution; *Cadmium Nitrate (cadmium nitrate tetrahydrate) in Spectrometric Standard Solution

CHEMICAL FORMULAS: Cd: [Cd(NO3)2]: HNO3

CAS REG. NOS:

7697-37-2 Aqueous Nitric Acid
7440-43-9 Cadmium
10325-94-7 Cadmium Nitrate

DOT CLASSIFICATION: Corrosive (Nitric Acid)

ID #: NA1760

Cadmium Compounds

ID #: UN2570

SRM NUMBER: 3108

MSDS NUMBER: 3108

Cadmium Spectrometric Standard Solution

NOTE: This SRM contains approximately 1% cadmium in a 10% nitric acid solution.

*The addition of cadmium to nitric acid solution forms cadmium nitrate which will precipitate upon evaporation or drying of the solution.

ISSUED: May, 1988

REVISED: May, 1990

TELEPHONE: (301) 975-2019

MANUFACTURER/SUPPLIER: Available from a number of suppliers.

MANUFACTURER'S/SUPPLIER'S NAME AND ADDRESS:

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
OFFICE OF STANDARD REFERENCE MATERIALS PROGRAM
GAITHERSBURG, MARYLAND 20899

===== SECTION II. HAZARDOUS INGREDIENTS =====

SEE COMPONENT INFORMATION.

HAZARDOUS COMPONENTS

LIMITS AND TOXICITY DATA

Nitric Acid

HUMAN, ORAL LDLO: (4)30 mg/kg

CADMIUM

HUMAN, INHALATION LCLO: 39 mg/m3 for 20 mins.

RAT, ORAL LD50: 225 mg/kg

RAT, INHALATION LC50: 25 mg/m3 for 30 mins.

Cadmium Nitrate*

RABBIT, SKIN (SEV): 500 mg for 24 hrs.

RABBIT, EYE (MOD.): 20 mg for 24 hrs.

*Compound formed in solution.

NOTE: These standards reflect hazardous concentrations of 55-70% for nitric acid and ~ 100% for cadmium and cadmium nitrate.

===== SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

NITRIC ACID:

APPEARANCE AND ODOR: A white to slightly yellow liquid that darkens to a brownish color upon aging and/or exposure to light; characteristic NO2 odor.

SOLUBILITY IN OTHER COMPOUNDS: Decomposes in alcohol.

CADMIUM NITRATE: -

APPEARANCE AND ODOR: White, amorphous pieces of hygroscopic needles.

MOLECULAR WEIGHT: 236.42

MELTING POINT: 350 °C

SOLUBILITY IN WATER: Soluble.

SOLUBILITY IN OTHER COMPOUNDS: Soluble in ammonia and alcohol.

DMIUM:

APPEARANCE AND ODOR: Hexagonal crystals, silver-white malleable metal.

MOLECULAR WEIGHT: 112.41

DENSITY: 8.642

BOILING POINT: 767 + or - 2 'C

MELTING POINT: 320.9 'C (becomes brittle at 80 'C)

REFRACTIVE INDEX: 1.13

MOHS HARDNESS: 2.0

VAPOR PRESSURE (AT 394 'C): 1 mm

SOLUBILITY IN WATER: Insoluble

SOLUBILITY IN OTHER COMPOUNDS: Soluble in acids, especially nitric, and in ammonium nitrate.

NOTE: Physical and chemical data on this nitric acid solution does not exist. The data provided above is for the hazardous ingredients >= 1%.

===== SECTION IV. FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: Nonflammable, however, nitric acid is a strong oxidizing agent which can react with combustible materials to cause fires.

(METHOD USED): N/A

AUTOIGNITION TEMPERATURE: N/A

(NOTE: Autoignition temperature for Cd dust layer is 250 'C)

FLAMMABILITY LIMITS IN AIR (VOLUME %): N/A

EXTINGUISHING MEDIA: Nitric Acid does not burn. Use extinguishing agents that will put out the surrounding fire. Use a water spray to dilute nitric acid during fires and to absorb liberated oxides of nitrogen.

SPECIAL FIRE PROCEDURES: Self-contained breathing apparatus should be used by firefighters in an enclosed area with full protective clothing when nitric acid is involved in the fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Although nitric acid does not burn, it is a powerful oxidizing agent that can react with combustible materials to cause fires. The acid can also react with metals to liberate extremely flammable hydrogen gas.

The acid reacts violently with acetic acid, acetic anhydride, (acetone + acetic acid), (acetone + H₂SO₄), acetylene, acrolein, acrylonitrile, allyl alcohol, allyl chloride, 2-amino ethanol, NH₃, NH₄ OH, aniline, anion exchange resins, (dichromate + anion exchange resins), Sb, AsH₃, Bi, B, boron decahydride, BP, BrF₅, n-butyraldehyde, Ca hypophosphite, C, Cs₂C₂, 4-chloro-2-nitroaniline, ClF₃, chlorosulfonic acid, cresol, cumene, Cu₃N₂, CuN₃, cyanides, cyclic ketones, cyclohexanol, cyclohexanone, diborane, 2,6-di-tert-butyl phenol, diisopropyl ether, epichlorohydrin, ethanol, m-ethylaniline, ethylene imine, 5-ethyl-2methyl pyridine, 5-ethyl-2-picoline, C₂H₅PH₂, FeO, F₂, furfuryl alcohol, Ge, glyoxal, hydrazine, HN₃, HI, H₂O₂, H₂Se, H₂S, H₂Te, (indane + H₂SO₄), isoprene, (ketones + H₂O₂), (lactic acid + HF), Li, Li₆Si₂, Mg, Mg₃P₂, Mg-Ti alloy, Mn, mesitylene, mesityl oxide, 2-methyl-5-ethyl puridine, 4-methyl-cyclohexanone, NdP, nitrobenzene, oleum, organic matter, PH₃, PH₄I, P, P₄I₃, PCl₃, phthalic acid, phthalic anhydride,

KH₂PO₂, beta-propiolactone, propylene oxide, pyridine, Rb₂C₂, Se, selenium iodophosphide, (Ag + ethanol), Na, NaN₃, NaOH, SbH₃, sulfamic acid, (H₂SO₄ + glycerides), terpenes, B₄H₁₀, thiocyanates, thiophene, Ti, Ti alloy, Ti-Mg alloy, (H₂SO₄ + C₆H₅CH₃), toluidine, triazine, uns-dimethyl hydrazine, U, U-alloy, U-Nd alloy, U-Nd-Zr alloy, vinylacetate, vinylidene chloride, Zn, Zr-U alloys.

Cadmium and cadmium containing compounds can react violently with fused ammonium nitrate. Contact with hydrochloric and sulfuric acids generates flammable hydrogen gas (reaction is slow).

===== SECTION V. REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Avoid any contact with incompatible chemicals. Avoid excessive heat.

INCOMPATIBILITY (MATERIALS TO AVOID): Contact with organic materials such as wood, paper, sawdust, or alcohol, etc., may cause fires. Combustible materials can attain increased flammability after being exposed to nitric acid even if they do not immediately catch fire.

Oxides of nitrogen are evolved from cadmium upon oxidation by nitric acid. Cd is incompatible with strong oxidizing agents, elemental sulfur, selenium, tellurium and hydrazoic acid.

See UNUSUAL FIRE AND EXPLOSION HAZARDS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Nitrous oxides, including NO, NO₂, N₂O₃ and N₂O as well as nitric acid mist or vapor can be produced upon decomposition or reaction of HNO₃.

Cadmium can also produce toxic oxides of nitrogen upon oxidation by nitric acid. Heating cadmium metal produces toxic fumes of cadmium oxide.

HAZARDOUS POLYMERIZATION: Will Not Occur

===== SECTION VI. HEALTH HAZARD DATA =====

ROUTE OF ENTRY:

[ANHALATION: X
SKIN: X
INGESTION: X

HEALTH HAZARDS (ACUTE AND CHRONIC): This material is corrosive to all body tissues. Nitric acid is extremely destructive to tissue of the mucus membranes, upper respiratory tract, eyes and skin.

Cadmium is toxic by inhalation and ingestion. Acute toxicity is almost always caused by inhalation of fumes or dust. Chronic poisoning has been reported after prolonged exposure to cadmium oxide fumes and dust, cadmium sulfides and cadmium stearates. The primary effects of chronic inhalation in humans are pulmonary emphysema and kidney damage. Skeletal abnormalities (osteoporosis and pseudofractures) and anemia have been reported following prolonged exposure to cadmium oxide. Prolonged exposure can cause anosmia and a yellow stain that gradually appears on the teeth. NIOSH has recommended that cadmium compounds be regarded as potential occupational carcinogens. This recommendation is based in part on recent epidemiological evidence of excessive lung cancer among workers exposed to cadmium oxide.

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation, difficulty breathing, burning sensation, and yellow skin discoloration can result from contact with nitric acid.

Nausea and vomiting can result from uranium contact. Ingestion of cadmium

compounds can cause severe gastrointestinal distress such as diarrhea and abdominal pain. Inhalation of the fumes can cause irritation of the nose and throat, cough, dyspnea, chest pains, fever and chills. Symptoms of acute toxication do not develop until several hours after the exposure.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/A

NOTE: Heavy smoking has been reported to considerably increase the tissue levels of Cd.

LISTED AS A CARCINOGEN/POTENTIAL CARCINOGEN:

	YES	NO
IN THE NATIONAL TOXICOLOGY PROGRAM (NTP) REPORT ON CARCINOGENS:	X	
IN THE INTERNATIONAL AGENCY FOR RESEARCH (IARC) MONOGRAPHS:	X	
BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):	X	

NOTE: Cadmium and cadmium nitrate are considered potential carcinogens.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN: Wash immediately with soap and water. Remove contaminated clothing. Watch for chemical burns and treat them accordingly. Contact a physician if necessary.

NOTE TO PHYSICIAN: Wash affected skin areas with a 5% solution of sodium bicarbonate (NaHCO₃).

EYE CONTACT: Immediately flush eyes, including under the eyelids, with plenty of water for at least 15 minutes. Contact a physician if necessary.

INHALATION: Remove the victim to fresh air and restore and/or support breathing. Contact a physician if necessary.

INGESTION: Call a poison control center. Never give anything by mouth to someone who is convulsing. Do not induce vomiting. If the victim is responsive, administer one or two glasses of water to drink as quickly as possible after exposure.

TARGET ORGAN(S) OF ATTACK: HNO₃ Lungs, Skin

CD AND COMPOUNDS: Lungs, Respiratory System, Blood, GI Tract, Kidneys

NOTE: Preplacement and annual medical examinations with emphasis on respiratory tract, skin irritations, dental erosion, and lung function tests, should be provided for workers frequently exposed to nitric acid. Medical surveillance procedures for urinary cadmium deposits and protein determinations, and pulmonary-function testing should also be performed.

===== SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Notify safety personnel, provide adequate ventilation and eliminate all sources of ignition immediately in case contact with metals should produce highly flammable hydrogen gas. Cleanup personnel need protection against contact with and inhalation of nitric acid. Use water sprays to direct nitric acid away from incompatible chemicals. Surfaces contaminated with spills should be covered with soda ash or sodium bicarbonate to neutralize the acid. Place the neutralized material into containers suitable for eventual disposal, reclamation or destruction.

WASTE DISPOSAL: Follow all Federal, state and local laws governing disposal. Consider reclamation, recycling, or destruction rather than disposal into a landfill.

HANDLING & STORING: The nitrogen oxides produced from the acid are all toxic; nitric acid itself is corrosive. Neoprene gloves and body shields should be used where splashing may occur. Chemical safety showers and eyewash stations

must be readily available. Workers must receive training before handling this material in the workplace; even experienced workers should undergo refresher training periodically.

NOTE: DO NOT WEAR CONTACT LENSES IN THE WORK AREA! Contact lenses pose a special problem. Soft lenses can absorb irritants and all lenses concentrate them. Particles can adhere to lenses and cause corneal damage.

Store in a cool, dry, well-ventilated area away from incompatible materials, such as strong bases, metal powders, carbides, sulfides, and any other readily oxidizable material (see sect. IV and sect. V). Protect containers from physical damage and keep from direct sunlight.

===== SECTION VIII. SOURCE DATA/OTHER COMMENTS =====

SOURCES:

Genium Publishing Corporation, MSDS No. 7, August, 1988.
Genium Publishing Corporation, MSDS No. N154, October, 1985.
DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 5TH ED., 1979.
HANDBOOK OF TOXIC AND HAZARDOUS CHEMICALS AND CARCINOGENS, 2ND ED., 1985.
HAWLEY'S CONDENSED CHEMICAL DICTIONARY, 11TH ED., 1987.
THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA, 2ND ED., VOL. I AND II, 1988.

Carmelita S. Davis (301) 975-6439

National Institute of Standards and Technology
Office of Standard Reference Materials
Gaithersburg, Maryland 20899

NOTE: Physical and chemical data contained this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however, NIST does not certify the data on the MSDS. The certified values for this material are given only on the NIST Certificate of Analysis.

66-03-05357
6627-4004

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
120 ERIE BOULEVARD
SCHENECTADY, N.Y. 12305



NO. 350

CARBON DISULFIDE
Revision B

DATE September 1982

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CARBON DISULFIDE

OTHER DESIGNATIONS: CS₂, Carbon Bisulfide, Carbon sulfide, Dithiocarbonic anhydride
CAS #000 075 150

MANUFACTURER: Available from several suppliers, including:
Stauffer Chemical Co.
Industrial Chemical Div.
Westport, Conn 06880 Tel: (203) 222-3000

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Carbon disulfide -----	>99.9	8-hr TWA 10 ₃ ppm* or 30 mg/m ³ (skin)
*ACGIH(1982) TLV. Current OSHA PEL is 20 ppm for an 8-hr exposure, 30 ppm ceiling value, and 100 ppm peak value/30 min.		
NIOSH (1977) has recommended a TLV of 1 ppm with a ceiling of 10 ppm (15 minute sample).		
(Skin) notation indicates absorption through skin will significantly contribute to total exposure. <u>This</u> <u>material must be used with caution!</u>		
		Human, Oral LDLo 14 mg/kg

SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg F -----	115	Specific gravity at 20/4C -----	1.26
Vapor pressure at -5C, mm Hg -----	100	Evaporation rate (BuAc=1) -----	22.6
at 20C, mm Hg -----	300	Molecular weight -----	76.14
at 28C, mm Hg -----	400	Melting point, deg F -----	-169
Vapor density, OC, (Air=1) -----	2.67	Viscosity, 73F, cp -----	0.36
Solubility in water @ 25C, g/100g -----	0.22		
Appearance & Odor: Clear, colorless to yellow, mobile liquid; unpleasant odor (sulfurous) with an odor threshold of about 7 ppm. NOTE: May be very low in odor when very pure.			

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
-30°C (closed up)	100°C	% by vol.	1.0	50.0

Extinguishing media: Water fog or spray, high expansion or film forming foam; CO₂ for
small fires. Contact of vapors with heat and rust (catalyst), a hot light bulb,
or impact (hammer blow) may produce a fire.

Firefighters should maintain cooling streams of water on fire area after fire is out
to cool area and prevent CS₂ reignition. CS₂ fires are more difficult to control
and extinguish than hexane fires. CS₂ vapor collects in sumps and low lying areas;
it can flow along surfaces to a source of ignition and flashback.
Firefighters need self-contained breathing apparatus.

SECTION V. REACTIVITY DATA

Carbon disulfide is stable in closed containers at room temperature (yellows in sun-
light). It does not polymerize. It is not considered a highly reactive substance;
however, chemically active metals such as zinc, sodium, potassium plus CS₂ react
with incandescence, and CS₂ with azides or organic amines can be explosive. The
flammability danger of carbon disulfide is high as an autoignition of 100°C is
easily achieved. It is an OSHA Class IB Flammable Liquid.

It is incompatible with strong oxidizing agents.

Combustion can release sulfur dioxide and carbon monoxide.

H = 3 NOM 3/5/86

Flam 4 NB 1-15-86

As Safety

GENERAL ELECTRIC

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R-1, NMT 1/15/86

SECTION VI. HEALTH HAZARD INFORMATION	TLV 10 ppm (skin) See Sect II
<p>This material acts quickly on the central nervous system. Overexposure causes vomiting, headache, dizziness, depression, indigestion, irritability, narcosis. Loss of consciousness, convulsions, respiratory paralysis and death occur in severe cases. Eye contact with liquid causes immediate and severe irritation. CS₂ defats the skin. It can cause dermatitis, redness and blistering of the skin. It is absorbed through the skin where it can damage peripheral nerves and produce systemic effects. Chronic exposure can seriously damage the CNS & cause vision problems, liver and kidney damage, anemia, fatigue and debility. 1-2 oz has been estimated as oral LD₅₀ for adult.</p> <p>FIRST AID: <u>Respiration is of prime importance! Contact a physician for overexposures.</u></p> <p><u>Eye Contact:</u> Flush with water for 15 min., including under eyelids.</p> <p><u>Skin Contact:</u> Wash contaminated areas with soap and water. Remove soiled clothing.</p> <p><u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed.</p> <p><u>Ingestion:</u> Gastric lavage is needed. NIOSH (1978) recommended inducing vomiting.</p> <p>ASTM E752 states "do not induce vomiting". <u>Get medical help promptly.</u></p> <p><u>Get medical help for observation, support and treatment after first aid.</u></p>	
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES	
<p>Notify safety personnel. Evacuate area except for clean-up personnel with protection against liquid contact and vapor inhalation. Institute prior plan. Remove ignition sources. Provide optimum, explosion-proof ventilation. Contain spill.</p> <p>A. Evaporate small spill under good ventilation with fire apparatus ready.</p> <p>B. Flush spill with water to special retention basin where CS₂ is collected below a water layer for disposal. (Do not flush to sewer!)</p> <p>C. Absorb in sand or ash and cover with water for pick up (non-sparking tools).</p> <p>DISPOSAL: Destroy scrap by controlled combustion in approved facility (with scrubber), or recover by distillation. Follow Federal, State and Local regulations.</p> <p>EPA(RCRA) HW No. P022; EPA(CWA) RQ 5000 lb.</p>	
SECTION VIII. SPECIAL PROTECTION INFORMATION	
<p>Provide efficient exhaust and floor level ventilation (explosion-proof) to keep work place vapor levels below TLV requirements. Provide approved positive pressure, self-contained breathing apparatus with full facepiece for emergency or non-routine use below 500 ppm.</p> <p>Use PVA gloves, aprons or other impervious protective clothing to prevent skin contact. (Avoid immersing gloved hands in CS₂ for extended periods.) Use chemical safety goggles if splashing is possible.</p> <p>An eyewash station and safety shower should be available in the area of use. Provide suitable training to those working with CS₂. Keep pertinent medical records.</p> <p>Provide preplacement and periodic medical exams for those regularly exposed to CS₂, with emphasis on the nervous, cardiovascular & reproductive systems, eyes, liver, kidneys, and skin. (CS₂ can be a reproductive hazard at high exposures.)</p>	
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS	
<p>Store in cool, well-ventilated, fire-proof area protected with automatic sprinklers and away from ignition sources, oxidizing agents, and combustibles. In large tanks fill voids above CS₂ with water or nitrogen as the tank is emptied. Avoid exposure to direct sunlight. Prevent physical damage to containers.</p> <p>Electrical services must meet code requirements. Store as OSHA Class IB Flammable Liquid. No smoking near CS₂. Ground and bond containers for transfer to prevent static sparks. Use non-sparking tools. Avoid breathing vapors! Avoid skin and eye contact. Be especially cautious in repetitive usage of this material!</p> <p>DOT Classification: <u>FLAMMABLE LIQUID</u> I.D. UN No. 1131</p> <p>DATA SOURCE(S) CODE: <u>1-12, 16, 18, 23, 25, 27, 34, 37, 47-49, ASTM E752</u></p>	
<p>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</p>	APPROVALS: MIS/CRD <i>J. M. Nelson</i>
	INDUST. HYGIENE/SAFETY <i>Jan 9-22-82</i>
	MEDICAL REVIEW: 3 October 1982

PORTS MSDS #: 5250

PRODUCT: CARBON TETRACHLORIDE

PART NUMBER:

FORMULA: CCl₄

KEYWORD: SOLVENT

PORTS NUMBER: 03-403-0426

PORTS MISC INFO:
01-03-0426

PORTS RATING: HFR=400

MANUFACTURER:
MALLINCKRODT, INC.
P.O. BOX 800
PARIS
KY

40362
PHONE: PHONE:
EMERGENCY PHONE: 314-539-1600

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 170 F	NOTE: 76.8'C.
Melting Point. . . .	EQ -9 F	NOTE: -23'C.
Freezing Point . . .	NG	
Pour Point	NG	
Softening Point. . .	NG	
Specific Gravity . .	EQ 1.59	
Vapor Pressure . . .	EQ 91	NOTE: MMHG, 20'C.
Vapor Density. . . .	EQ 5.3	
Percent Volatiles. .	NG	
Evaporation Rate . .	N*	NOTE: NO INFORMATION FOUND
pH	NG	
Molecular Weight . .	EQ 153.82	
Viscosity.	NG	
Solubility in Water.	0.08 GM/100 GM WATER @ 20 C (68 F).	
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ETHER-LIKE ODOR.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NG
Flash Point, Open Cup . . .	NG
Fire Point.	NG
Auto Ignition.	NG
Explosive/Flammable Limits	
Lower (LEL).	NG
Upper (UEL).	NG

Shipping Regulations

UN/NA Number.	NG
D.O.T. Hazard Class. . .	ORM-A
Label	NOT GIVEN
Proper Shipping Name . .	NOT GIVEN

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 7/17/91

===== Component Information =====

CARBON TETRACHLORIDE

OSHA PEL (PPM): 2
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 5
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: NG
C.A.S. No.: 56235

Note:

TLV: SKIN.

===== PRODUCT IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: CARBON TETRACHLORIDE

SYNONYMS: Tetrachloromethane, carbon tet, carbon chloride

HAZARDOUS INGREDIENTS: Carbon tetrachloride

SUPERSEDES: 04-06-89

EMERGENCY PHONE NUMBER: 314-539-1600

MANUFACTURER'S NAME AND ADDRESS:

MALLINCKRODT, INC.
SCIENCE PRODUCTS DIVISION
P.O. BOX 800
PARIS, KY 40362

===== PRECAUTIONARY MEASURES =====

POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. EXPOSURE MAY CREATE A CANCER RISK. DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION. AFFECTS LIVER, KIDNEY AND CENTRAL NERVOUS SYSTEM.

Do not breathe mist.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

===== EMERGENCY/FIRST AID =====

If swallowed, get immediate medical attention. If physician is not immediately available, induce vomiting by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. In all cases call a physician immediately.

SEE HEALTH HAZARD INFORMATION SECTION.

DOT HAZARD CLASS: ORM-A

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION INFORMATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

FIRE: Not considered to be a fire hazard.

EXPLOSION: Not considered to be an explosion hazard.

FIRE EXTINGUISHING MEDIA: Use any means suitable for extinguishing surrounding fire.

SPECIAL INFORMATION: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA RATINGS:

HEALTH: 3
FLAMMABILITY: 0
REACTIVITY: 0

===== REACTIVITY DATA =====

STABILITY: Stable under ordinary conditions of use and storage.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic gases and vapors such as hydrogen chloride, chlorine, phosgene, and carbon monoxide may be released when heated to decomposition.

HAZARDOUS POLYMERIZATION: This substance does not polymerize.

INCOMPATIBILITIES: Chemically active metals such as sodium, potassium, and magnesium. Will attack some forms of plastics, rubber, and coatings.

===== LEAK/SPILL DISPOSAL INFORMATION =====

Ventilate and evacuate area. Clean-up personnel require protective clothing and respiratory protection from vapors. Allow only qualified personnel to handle the spill.

SPILLS: Contain and recover spills when possible. Cover larger spills with earth, sand, or inert solid. Transfer to a suitable container.

DISPOSAL: Waste may be disposed in a RCRA approved facility.

REPORTABLE QUANTITY (RQ) (CWA/CERCLA): 10 lbs.

Ensure compliance with local, state and federal regulations.

===== HEALTH HAZARD INFORMATION =====

EXPOSURE/HEALTH EFFECTS:

INHALATION: Inhalation has a narcotic effect. Symptoms include headache, dizziness, nausea and dullness. Following exposures of high concentrations, victim may become unconscious, and if exposure is not terminated, death can result from respiratory failure.

INGESTION: Abdominal pain, vomiting, diarrhea, visual disturbances, dizziness and unconsciousness can occur. Severe gastrointestinal upset progressing to serious kidney and liver damage can occur. Death can occur

immediately or be delayed for as much as one week.

SKIN CONTACT: Can be absorbed through skin, with symptoms paralleling ingestion exposure. A dermatitis may be produced following long or repeated contact. Skin oils are removed upon contact, and the skin becomes red, cracked, and dry.

EYE CONTACT: Severe irritant as vapor or liquid. Symptoms of burning and intense irritation occur.

CHRONIC EXPOSURE: Affects nervous system. Delayed effects from exposure include damage to the heart, liver and kidneys. Repeated or prolonged exposures may cause skin irritation. Symptoms of darkened urine and liver cirrhosis have been reported.

AGGRAVATION OF PRE-EXISTING CONDITIONS: Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance.

FIRST AID:

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

SKIN EXPOSURE: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

EYE EXPOSURE: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

TOXICITY DATA (RTECS, 1991):

ORAL RAT LD50: 2350 mg/kg

SKIN RAT LD50: 5070 mg/kg.

INHALATION RAT LC50: 8000 ppm/4H.

IRRITATION DATA: Skin rabbit 4 mg mild; Eye rabbit 500 mg/24H severe.

Mutation data cited.

Reproductive references cited.

Tumorigenic references cited.

CARCINOGENIC REVIEW:

SUFFICIENT EVIDENCE IN EXPERIMENT ANIMALS: IARC Category 2B; NTP Listed Carcinogen; OSHA Regulated Carcinogen.

===== OCCUPATIONAL CONTROL MEASURES =====

AIRBORNE EXPOSURE LIMITS:

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): 2 ppm (TWA)

ACGIH THRESHOLD LIMIT VALUE (TLV): 5 ppm (TWA) skin. (Listed as an ACGIH suspect carcinogen.)

VENTILATION SYSTEM: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure limits. Local exhaust

ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, Annual of Recommended Practices, most recent edition, for details.

PERSONAL RESPIRATORS (NIOSH APPROVED): If the TLV is exceeded, a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full-facepiece respirator or air-lined hood may be worn.

SKIN PROTECTION: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

EYE PROTECTION: Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

===== STORAGE AND SPECIAL INFORMATION =====

Keep in tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Wear special protective equipment (OCCUPATIONAL CONTROL MEASURES Section) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace.

===== ADDENDUM =====

THIS ADDENDUM MUST NOT BE DETACHED FROM THE MSDS. IDENTIFIES SARA 313 SUBSTANCES(S). ANY COPYING OR REDISTRIBUTION OF THE MSDS MUST INCLUDE A COPY OF THIS ADDENDUM.

REGULATORY STATUS:

(CHEM.KEY: CARBO)

HAZARD CATEGORIES FOR SARA SECTION 311/312 REPORTING:

ACUTE	CHRONIC	FIRE	PRESSURE	REACTIVE
X	X			

PRODUCT OR COMPONENTS OF PRODUCT:

CARBON TETRACHLORIDE (56-23-5)

SARA EHS SECT. 302:

RQ (LBS.): No
TPQ (LBS.): No

SARA SECTION 313 CHEMICALS:

NAME LIST: Yes
CHEMICAL CATEGORY: No

CERCLA SEC. 103 RQ (LBS.): 10

RCRA SEC. 261.33: U211

SARA SECTION 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA SECTION 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous

Substance. An asterisk (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA SECTION 313 CHEMICALS: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA SEC. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4.

RCRA: Resource Conservation and Recovery Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33.

===== SPECIAL NOTES =====

Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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PORTS MSDS #: 5301

PRODUCT: CHLORINE TRIFLUORIDE

PART NUMBER:

FORMULA: ClF3

KEYWORD: TRIFLUORIDE

PORTS NUMBER: 03-450-2140; 66-003-0805

PORTS MISC INFO:
95-03-3050

PORTS RATING: HFR=404

MANUFACTURER:
AIR PRODUCTS & CHEMICALS, INC.
7201 HAMILTON BLVD.
ALLENTOWN
PA

18195
PHONE: PHONE: 800-752-1597
EMERGENCY PHONE: 800-523-9374

===== Physical/Chemical Characteristics =====

Boiling Point	EQ 53.2 F	NOTE: 11.8'C.
Melting Point	NG	
Freezing Point	EQ -105.4 F	NOTE: -76.3'C.
pour Point	NG	
softening Point	NG	
Specific Gravity	EQ .509	NOTE: SPEC VOL: 4.25 FT3/#
Vapor Pressure	EQ 1112	NOTE: MMHG, 21.5 PSIA.
Vapor Density	EQ 3.14	NOTE: SPEC GRAVITY @ 70'F.
Percent Volatiles . . .	NG	
Evaporation Rate	NG	
pH	NG	
Molecular Weight	EQ 92.45	
Viscosity	NG	
Solubility in Water . . .	REACTS VIOLENTLY.	
Odor/Appearance/Other Characteristics:		
COLORLESS GAS, PALE YELLOW LIQ., WHITE SOLID, SHARP PUNGENT & IRRITATING ODOR.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NA	
Flash Point, Open Cup . . .	NA	
Fire Point	NG	
Auto Ignition	NA	
Explosive/Flammable Limits		
Lower (LEL)	N*	NOTE: NONFLAMMABLE.
Upper (UEL)	N*	NOTE: NONFLAMMABLE.

Shipping Regulations

UN/NA Number UN1045
D.O.T. Hazard Class . . . 2.3
Label POISON GAS, OXIDIZER
Proper Shipping Name . . . CHLORINE TRIFLUORIDE, COMPRESSED

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 7/01/94

===== Component Information =====

CHLORINE TRIFLUORIDE

OSHA PEL (PPM): 0.1
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 0.1
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: NG
C.A.S. No.: 7790912

Note:

PEL & TLV: CEILING.

===== PRODUCT IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: CHLORINE TRIFLUORIDE

CHEMICAL NAME: Chlorine Trifluoride

SYNONYMS: Chlorine Trifluoride

CHEMICAL FAMILY: Halogen fluoride

MSDS NUMBER: 1025

REVISION: 6

PRODUCT INFORMATION: 1-800-752-1597

MANUFACTURER'S NAME AND ADDRESS:

AIR PRODUCTS AND CHEMICALS, INC.
7201 HAMILTON BOULEVARD
ALLENTOWN, PA 18195-1501

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

===== HAZARD IDENTIFICATION =====

EMERGENCY OVERVIEW: Chlorine trifluoride is a toxic nonflammable liquefied compressed gas packaged in cylinders under its vapor pressure of 21.5 psia @ 70°F. It is an extremely strong oxidizer and is highly reactive. It has a sharp, pungent odor. The vapor is heavier than air and may collect in low areas or along the floor. It will react with water to form hydrofluoric acid. Liquid spills are extremely dangerous and should not be approached. Wear Self Contained Breathing Apparatus (SCBA) and protective outer garments when entering release area. Exposed personnel require specific medical treatment procedures. If involved in a fire, products of combustion are toxic.

EMERGENCY TELEPHONE NUMBERS:

IN CONTINENTAL U.S., CANADA, OR PUERTO RICO: 800-523-9374
OTHER LOCATIONS: 610-481-7711

POTENTIAL HEALTH EFFECTS:

INHALATION: Corrosive and extremely irritating to the upper and lower respiratory system. Deep lung inflammation (chemical pneumonitis), and

abnormal fluid build up in the lungs (pulmonary edema) are possible and can be fatal.

EYE CONTACT: Irritating and corrosive. Exposure to elevated concentrations can cause burns that may result in blindness.

SKIN CONTACT: Direct skin contact will cause irritation and burns. It will react with moisture to form hydrofluoric acid which may cause additional tissue destruction.

CARCINOGENIC POTENTIAL: Chlorine trifluoride is not listed in IARC, NTP, or OSHA Subpart Z as a carcinogen or potential carcinogen.

EXPOSURE INFORMATION:

ROUTE OF ENTRY: Inhalation (primary), skin and eye contact.

TARGET ORGANS: Airway, lungs, skin and eyes.

EFFECT: Burns to all affected areas.

SYMPTOMS: Coughing, wheezing, respiratory distress, irritation and abnormal fluid formation in the throat, mouth, and nose. Burning and tearing of the eyes. Redness and painful burns to the skin that may be delayed.

CONDITIONS AGGRAVATED: Asthma, emphysema or other respiratory diseases.

===== FIRST AID =====

INHALATION: Move exposed person to an uncontaminated area. If victim is not breathing give artificial respiration. If breathing is difficult give supplemental oxygen. If airway obstruction occurs the placement of an artificial airway by an emergency medical technician may be necessary. Following severe overexposure, trained personnel should administer 2.5% calcium gluconate by nebulizer with patient in sitting position. Excessive acute exposure may cause delayed pulmonary edema (fluid build up) to occur. Patient should be kept under medical observation for at least 24 hours.

EYE CONTACT: Flush eyes with water for a minimum of 5 minutes. Hold eyelids open with fingers to assure complete flushing. Seek medical attention immediately. Trained personnel should administer 1% calcium gluconate solution by continuous drip.

SKIN CONTACT: Flush with large quantities of water. Remove affected clothing. Soak the affected area in solutions of iced 0.24% Hyamine 1662 (benzethonium chloride) or 0.13% Zephiran (benzalkonium chloride). If soaking is impractical, cover burn area with compresses that have been immersed in this solution. Compresses should be changed every five minutes to insure fresh solution is in contact with the skin. Immersion or compresses must be used continuously for at least two hours. These compounds bind the active fluorides in an insoluble form, thus limiting the extent of the burn and relieving pain. Applying 2.5% calcium gluconate gel or slurry in water or glycerin is an alternate treatment for small or minor burns.

NOTE: The above treatment should also be followed for hydrofluoric acid burns resulting from contact with chlorine trifluoride handling systems. Hydrogen fluoride can cause severe burns that may not be immediately painful or visible. Hydrogen fluoride can deplete calcium levels in the body if not promptly treated, causing hypocalcemia which may be fatal. This may result from exposure by inhalation, ingestion, or skin burns larger than 25 square inches.

NOTE TO PHYSICIAN: If pain persists after above topical treatments are applied, it may be necessary to inject 10% aqueous calcium gluconate beneath, around and into burn area. This will more likely be necessary in the treatment of extensive burns or small burns where treatment has been delayed.

The patient should be observed for clinical symptoms of hypocalcemia

following ingestion or inhalation or following extensive burns. Serum calcium determinations must be performed immediately and periodically to monitor for hypocalcemia. EKGs should be performed to monitor for electrocardiographic evidence of hypocalcemia.

In additional information is needed, call the Air Products' emergency numbers (HAZARD IDENTIFICATION Section).

===== FIRE AND EXPLOSION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

EXTINGUISHING MEDIA: None. Most common extinguishing media will react with chlorine trifluoride and will not extinguish the fire.

HAZARDOUS COMBUSTION PRODUCTS: Hydrogen fluoride, and other toxic fluoride compounds.

FIRE FIGHTING PROCEDURES: Chlorine trifluoride will greatly enhance the flammability of other materials. If possible stop the flow of gas to the fire. Cool cylinders with water spray until well after fire is out. If possible, without risk, move cylinders away from fire area.

UNUSUAL HAZARDS: Upon exposure to intense heat or flame cylinder may vent rapidly and/or rupture violently. Chlorine trifluoride cylinders do not have a pressure relief device.

===== ACCIDENTAL RELEASE MEASURES =====

Evacuate all personnel from affected area. Increase ventilation to release area. Use appropriate protective equipment (SCBA) and chemical protective outer garment. If leak is from cylinder or cylinder valve, call the Air Products' emergency telephone number. If leak is in user's system close cylinder valve, safely vent residual product, and inert system before attempting repairs.

DOT 1993 EMERGENCY RESPONSE GUIDEBOOK SUGGESTED EVACUATION DISTANCES:

INITIAL: 500 feet in all directions (small spill or leak)
1000 feet in all directions (large spill or leak)

DOWNWIND PROTECTION: 0.2 miles - day, 1.9 miles - night (small spill or leak)
1.7 miles - day, 3.8 miles - night (night spill or leak)

DANGER: RELEASES OF LIQUID CHLORINE TRIFLUORIDE POSE AN EXTREMELY DANGEROUS SITUATION. IT WILL REACT VIOLENTLY WITH MOST MATERIALS IT CONTACTS INCLUDING CONCRETE, SAND, ASPHALT, AND WATER. EVACUATE AREA AND DO NOT APPROACH SPILLED PRODUCT. DO NOT ATTEMPT TO NEUTRALIZE. CONTACT AIR PRODUCTS' EMERGENCY RESPONSE CENTER AT 800-523-9374 FOR ASSISTANCE.

===== STORAGE AND HANDLING =====

STORAGE: Storage area temperatures should not exceed 125°F (52°C) and should be free of flammable and combustible materials. Storage should be away from heavily traveled areas and emergency exits. Avoid areas where salt or other corrosive materials are present. Secure cylinders in an upright position and store in a well-ventilated area protected from the weather. Valve protection caps and valve outlet seals should remain on cylinders not connected for use. Separate full from empty cylinders. Avoid excessive inventory and storage time. Use a first-in first-out system. Keep accurate inventory records. Visually inspect stored cylinders on a routine basis, at least weekly, for any indication of leakage or other problems.

HANDLING: Use only in well ventilated areas. Do not drag, roll, or slide

cylinder. Use a suitable handtruck designed for cylinder movement. Never attempt to lift a cylinder by its cap. Secure cylinders at all times while in use. Never apply flame or localized heat directly to any part of the cylinder. Do not allow any part of the cylinder to exceed 125°F (52°C). An adjustable strap-wrench should be used to remove over-tight or rusted cylinder caps.

When preparing to connect cylinder for use, always loosen valve outlet seal slowly. Once cylinder has been connected to process, open cylinder valve slowly and carefully. If user experiences any difficulty operating cylinder valve, discontinue use and contact supplier. Use a check valve to prevent reverse flow into cylinder. Use only the approved CGA-670 connection with lead gasket.

Carbon steel, stainless steel, or copper are suitable materials of construction for use with chlorine trifluoride. Brass should be avoided due to the possibility of dezincification. MONEL(R) and nickel are preferred for high temperature (>400°F) applications. Lead is the preferred gasket material. Most metals will form a passive fluoride film that protects the metal from further corrosion.

Any equipment that uses chlorine trifluoride must first be thoroughly cleaned, rinsed with solvent, and dried. The equipment should then be treated (passivated) with increasing concentrations and/or pressures of fluorine as a final cleaning process. This treatment, or passivation process, will allow the fluorine to react with and eliminate any impurities without ignition of equipment and will impart a protective fluoride surface layer. (Contact Air Products for procedure).

Systems that use this product may, over time, become contaminated with powder residue. This material is composed of metal fluorides and should be handled with caution as it may contain small amounts of hydrofluoric acid. Wear a respirator with dust filter and gloves. Systems that contain moisture may form hydrofluoric acid. Keep system under dry inert gas when not in use. This acid is very corrosive to skin and many materials of construction.

SPECIAL REQUIREMENTS: Always store and handle compressed gases in accordance with Compressed Gas Association, Inc. (ph. 703-412-0900) pamphlet CGA P-1, **SAFE HANDLING OF COMPRESSED GASES IN CONTAINERS**. Local regulations may require specific equipment for storage or use.

WARNING: It is extremely important that the precautions and procedures listed below are understood and implemented. Failure to do this can result in a violent, catastrophic failure of the operating system.

Systems for handling chlorine trifluoride must be of compatible materials that have been rigorously cleaned for oxidizer service, dried, and passivated with fluoride to form a protective fluoride layer.

Connection of system to cylinder is accomplished using a CGA 670 connection. This requires the use of a thoroughly clean lead gasket. The use of lead is mandatory. The gasket must be cleaned, for oxidizer service, and dried immediately before use.

The boiling point for chlorine trifluoride is 53.2°F. Process lines that contain product in the vapor phase must be kept above that temperature at all times to prevent the vapor from condensing. Chlorine trifluoride cylinders must not be heated by direct means and must never be exposed to localized or overall temperatures above 125°F (52°C).

Chlorine trifluoride must not be allowed to liquefy in process systems intended for vapor phase use. To assure this will not occur, all system components and lines must always be kept warmer than the source cylinder.

Due to the low vapor pressure of chlorine trifluoride at normal temperatures the use of a pressure reducing regulator is not necessary. A control valve, made of Monel or other suitable alloy, must be used in its place.

Allow valves in the system must have a metal to metal sealing surface. The seat should be a dissimilar metal then the stem.

Chlorine trifluoride is a liquefied compressed gas. When extracting product vapor phase from the cylinder the liquid will cool. This will lower the vapor pressure and will effect the process flowrate and pressure.

Cylinders chilled to less than 53°F by storage conditions or rapid vapor use will be at less than atmospheric pressure. Precautions must be taken to avoid introduction of air or other materials into the cylinder to prevent hazardous reactions from occurring.

CAUTION: Inexperienced or first time users of this product should contact the Air Products' Technical Information Center for additional information on storage, handling and use of this product. Call (800) 752-1597.

===== PERSONAL PROTECTION/EXPOSURE CONTROL =====

ENGINEERING CONTROLS: Provide ventilation and/or local exhaust to prevent accumulation of concentrations above 0.1 ppm.

PERSONAL PROTECTION:

GENERAL: Leather gloves, safety shoes, and safety glasses for handling cylinders. Chemical goggles with full-face shield, chemical resistant gloves and splash suit when connecting, disconnecting, or opening cylinders. Respirator with a dust filter is recommended when exposure to metal fluorides is possible. No NIOSH-approved air purifying respirator is available for this product.

EMERGENCY: Full-protection chemical resistant suit and SCBA or positive pressure air line with full-face mask and escape pack should be used in areas where the concentration exceeds 0.1 ppm.

NOTE: Chemical suits may react and burn if in contact with liquid product.

Protective clothing and equipment that may have been in contact with product must be decontaminated or discarded using an approved method. It should not be worn or carried outside the operating area.

===== PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

VAPOR PRESSURE @ 70°F (21.1°C): 21.5 psia (148 kPa)

===== REACTIVITY/STABILITY =====

CHEMICAL STABILITY: Stable

CONDITIONS TO AVOID: None

INCOMPATIBILITY: Reacts with all organic materials except certain perfluorinated hydrocarbons, and most inorganic substances except certain metals that have been treated with fluorine to form a passive fluoride layer.

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine monofluoride, oxygen difluoride, chlorine oxyfluorides, fluorine and hydrogen fluoride in the presence of moisture. Some of these compounds may be shock-sensitive and more toxic than chlorine trifluoride.

HAZARDOUS POLYMERIZATION: Will not occur.

===== TOXICOLOGICAL INFORMATION =====

CHLORINE TRIFLUORIDE IS TOXIC AND VERY IRRITATING AND CORROSIVE TO ALL LIVING tissue.

THE LETHAL CONCENTRATION FOR THIS PRODUCT: LC50 = 299 ppm (1 hr. rat).

Direct toxicity of this material may be accompanied by systemic depletion of calcium ion, an essential electrolyte. Chronic exposure may cause abdominal calcification in bone structure (fluorosis) due to low level systemic absorption.

The potential for hydrogen fluoride formation exists with exposure, therefore its toxicity must also be considered.

===== ECOLOGICAL INFORMATION =====

Do not release large amounts of this product to the atmosphere. The product does not contain any Class I or Class II ozone depleting chemicals. This product is not listed as a marine pollutant by DOT (49 CFR).

===== DISPOSAL =====

UNUSED PRODUCT/EMPTY CYLINDER: Return cylinder and unused product to supplier. Do not attempt to dispose of unused product. Ensure cylinder valve is properly closed, valve outlet cap has been reinstalled leak-tight, and valve protection cap is secured before shipping cylinder. If cylinder was received secured in a shipping cradle, it must be returned in that cradle.

DISPOSAL: Small quantities of this product may be disposed of by slowly flowing gas into a solid or preferably a liquid caustic scrubber. The flow rate must be controlled to prevent overheating the disposal unit.

Soda lime, a sodium hydroxide-calcium oxide mixture, is the preferred solid scrubber medium. A five to fifteen percent (by weight in water) solution of potassium hydroxide is preferred as a liquid scrubbing medium. To avoid the formation of hazardous hydrolysis products, do not use water. Chlorine trifluoride can react with water and form hydrogen fluoride, chloro-oxy fluorides, and oxygen difluoride.

===== TRANSPORTATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

REPORTABLE QUANTITY (RQ): 10 lbs. (4.54 kgs)

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure upright position in a well ventilated truck. Never transport in passenger compartment of a vehicle.

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with the owner's written consent is a violation of federal law.

===== REGULATORY INFORMATION =====

U.S. FEDERAL REGULATIONS:

ENVIRONMENTAL PROTECTION AGENCY (EPA):

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 requires notification to the National Response Center of a release of quantities of hazardous substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.

CERCLA REPORTABLE QUANTITY: None

SARA TITLE III: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986

SECTION 302: Requires emergency planning based on threshold planning quantities (TPQ's) and release reporting based on reportable quantities (RQ's) of EPA's extremely hazardous substances (40 CFR 355).

Chlorine trifluoride is not listed as an Extremely Hazardous Substance.

SECTIONS 311/312: Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA defined hazard classes.

THE HAZARD CLASSES FOR THIS PRODUCT ARE:

HEALTH: Immediate
Delayed

PHYSICAL: High pressure
Reactive
Fire

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372. This information must be included in all MSDS's that are copied and distributed for this material.

Chlorine trifluoride is not listed as a Section 313 chemical.

TOXIC SUBSTANCE CONTROL ACT (TSCA): Chlorine trifluoride is listed on the TSCA inventory.

40 CFR 68: Risk Management for Chemical Accident Release Prevention. Requires the development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Chlorine trifluoride is listed as a regulated substance.

THRESHOLD QUANTITY: 500 lbs. (227 kg)

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals. Require facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Chlorine trifluoride is listed as a highly hazardous chemical.

THRESHOLD QUANTITY (TQ): 1000 lbs. (454 kg)

STATE REGULATIONS:

CALIFORNIA:

PROPOSITION 65: This product does NOT contain any listed substances which the State of California requires warning under this statute.

SCAQMD RULE: VOC = N/A

RMPP RULE: California Risk Management and Prevention Program does not list chlorine trifluoride as an Acutely Hazardous Material (AHM)

===== SUPPLEMENTAL INFORMATION =====

HAZARD RATINGS:

	HEALTH	FLAMMABILITY	REACTIVITY	SPECIAL
NFPA:	4	0	4	W
HMIS:	4	0	4	

REVISION INFORMATION: New Format with additional sections added.

A = Not applicable

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y.



66-03-0870
No. 366

CHLOROBENZENE

Date October 1977

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CHLOROBENZENE

OTHER DESIGNATIONS: Chlorobenzol, Monochlorobenzene, Phenyl Chloride, C_6H_5Cl ,
CAS# 000 108 907

MANUFACTURER: Available from several suppliers

SECTION II. INGREDIENTS AND HAZARDS

	x	HAZARD DATA
Chlorobenzene	ca 100	TLV 75 ppm Rat, oral LD ₅₀ 2910 mg/kg

SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C - 132	Specific gravity ($H_2O=1$) - 1.11
Vapor pressure at 25 C, mm Hg - ca 12	Melting point, deg C -- -55 to -45
Vapor density (Air=1) ----- 3.9	Volatiles, % ----- ca 100
Water solubility ----- Insoluble	Molecular weight ----- 112.56

Appearance & Odor: A clear, colorless, volatile liquid with a faint, almond-like odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	LOWER	UPPER
29C (84F) (TCC)	638 C (1180F)		1.3%	7.1% 9.6% at 150C

Extinguishing media: CO_2 , dry chemical, or foam.
A water spray can be used to control small fires or cool containers of this material in a fire situation. A layer of water will float on top of chlorobenzene and may be useful for extinguishing fire in an open tank.
The dense vapors of this material may flow along surfaces or floors for a considerable distance to an ignition source, and then flash back.
Firefighters should use eye protection and self-contained breathing apparatus in fighting fires in which this material is involved.

SECTION V. REACTIVITY DATA

This material is stable to air, light and moisture at room conditions. It does not undergo hazardous polymerization.
This highly flammable material is dangerous if heated. It oxidizes to form HCl and CO when burned. It is an OSHA Class IB flammable liquid.
Keep separated from oxidizing agents.
Chlorobenzene can react violently with dimethylsulfoxide. Silver perchlorate will form a solvated salt with chlorobenzene which is shock sensitive (explosion).

SECTION VI. HEALTH HAZARD INFORMATION

TLV 75 ppm (350 mg/m³)

Chlorobenzene is a fairly strong narcotic with some irritant properties. Overexposure is irritating to the eyes and nasal passages. Excessive inhalation gives headache, dizziness, drowsiness, loss of consciousness, and twitching of extremities.

It is moderately toxic by inhalation or ingestion and can be absorbed slowly through the skin. Prolonged exposure or repeated exposures above the TLV may cause kidney and liver damage; but, in general, chronic exposure information is not established.

FIRST AID:

Eye contact: Immediately flush eyes with abundant running water for 15 minutes.

Get medical help if irritation persists.

Skin contact: Wash exposed areas promptly with soap and water. Be sure to remove promptly any contaminated clothing.

Ingestion: Get immediate medical help for gastric lavage.

Inhalation: Remove to fresh air. Restore breathing. Get prompt medical attention for all serious exposures.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Eliminate ignition sources; notify safety personnel. Provide ventilation (explosion proof). Clean up workers need protection against inhalation of vapors and contact with liquid. Collect spill with absorbent solid, such as paper or sawdust, or as a liquid and place in sealed metal container for disposal. Use spark-proof tools.

Disposal - Dispose of scrap by burning in an approved incinerator with a scrubber or dispose of through a licensed waste disposal company.

Pre-accident plans must be made to handle emergencies. Suppliers can be helpful in establishing emergency procedures.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate general ventilation and local exhaust ventilation (explosion-proof equipment!) to meet TLV requirements. Self-contained breathing apparatus should be available for emergency and non-routine use.

Use rubber gloves, aprons, protective clothing, etc. to avoid skin contact with liquid.

Use safety goggles where splashing is possible.

Provide an eye wash station and safety shower in area of use and handling.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in tightly closed containers, which are well protected from possible physical damage, in an outdoor or detached area (preferred) or fireproof storage facility. Keep away from heat, sources of ignition, and direct sunlight.

Ground and electrically interconnect containers and equipment for transfers to avoid static sparks. Use explosion-proof tools and electrical equipment and fixtures.

Dispense small amounts from safety cans.

Avoid breathing vapors! Avoid contact with the liquid.

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

APPROVALS: MIS, CRD *J. M. Wilson*

Industrial Hygiene
and Safety *Q. L. W.*

MEDICAL REVIEW:

PORTS MSDS #: 5121

PRODUCT: CHLOROFORM

PART NUMBER:

FORMULA: CHCl₃

KEYWORD: SOLVENT

PORTS NUMBER: 03-403-3035

PORTS MISC INFO:
01-03-3035

PORTS RATING: HFR=411

MANUFACTURER:
J.T. BAKER, INC.
222 RED SCHOOL LANE
PHILLIPSBURG
NJ08865
PHONE: PHONE:
EMERGENCY PHONE: 908-859-2151

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 141 F	NOTE: @ 760 MMHG, 61'C.
Melting Point. . . .	EQ -83 F	NOTE: @ 760 MMHG, -64'C.
Freezing Point. . . .	NG	
Pour Point.	NG	
Softening Point. . . .	NG	
Specific Gravity . . .	EQ 1.48	
Vapor Pressure	EQ 159	NOTE: MMHG, 20'C.
Vapor Density.	EQ 4.1	
Percent Volatiles. . .	EQ 100	NOTE: 21'C.
Evaporation Rate . . .	EQ .09	NOTE: BUTYL ACETATE=1.
pH	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight . . .	EQ 119.38	NOTE: FORMULA WT.
Viscosity.	NG	
Solubility in Water. .	SLIGHT (0.1-1%).	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID, PLEASANT ODOR /	ODOR THRESHOLD: NOT APPLI/NOT AVAIL.	

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup. . .	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number.	UN1888
D.O.T. Hazard Class. . .	6.1
Label	6, HARMFUL, STOW AWAY FROM FOODSTUFFS
Proper Shipping Name . .	CHLOROFORM

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/04/94

===== Component Information =====

CHLOROFORM

OSHA PEL (PPM):
OSHA PEL (MG/M3): 9.78
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 49
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 98 100
C.A.S. No.: 67663

Note:

NE= NOT ESTABLISHED / PEL: 2 PPM / TLV: 10 PPM.

===== PRODUCT IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: Chloroform

COMMON SYNONYMS: Trichloromethane; Methyl Trichloride; Methane Trichloride

CHEMICAL FAMILY: Chlorinated Hydrocarbons

CAS NO.: 67-66-3

NIOSH/RTECS NO.: FS9100000

PRODUCT USE: Laboratory Reagent

PRODUCT CODES: 9174, E910, 9186, 9175, 9182, 9183, 9257, 9180, 9181

ISSUED: 06/25/94

24-HOUR EMERGENCY TELEPHONE: 908-859-2151

NATIONAL RESPONSE CENTER: 800-424-8802

CHEMTREC: 800-424-9300

NATIONAL RESPONSE IN CANADA: CANUTEC 613-996-6666

OUTSIDE U.S. AND CANADA: Chemtrec 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers are to be used ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT INVOLVING CHEMICALS. All non-emergency questions should be directed to Customer Service (1-800-JTBAKER) for assistance.

MANUFACTURER'S NAME AND ADDRESS:

J.T. BAKER INC.
222 RED SCHOOL LANE
PHILLIPSBURG, NJ 08865

C2915 -08

PRECAUTIONARY LABELING:

BAKER SAF-T-DATA* SYSTEM:

HEALTH: 3 SEVERE
FLAMMABILITY: 0 NONE
REACTIVITY: 1 SLIGHT
CONTACT: 2 MODERATE

LABORATORY PROTECTIVE EQUIPMENT: GOGGLES & SHIELD, LAB COAT & APRON, VENT
MOD, PROPER GLOVES

U.S. PRECAUTIONARY LABELING: POISON! DANGER! MAY BE FATAL IF SWALLOWED OR
INHALED. EXCEPTIONAL HEALTH HAZARD: READ MATERIAL SAFETY DATA SHEET. CAUSES
IRRITATION. HARMFUL IF ABSORBED THROUGH SKIN.

NOTE: REPORTED AS CAUSING CANCER IN LABORATORY ANIMALS. EXERCISE DUE
CARE.

Avoid contact with eyes, skin, clothing. Do not breathe vapor. Keep in
tightly closed containers. Use with adequate ventilation. Wash thoroughly
after handling. In case of spill, soak up with sand or earth.

INTERNATIONAL LABELING: Harmful by inhalation. Possible risks of
irreversible effects. Keep out of reach of children. Avoid contact with skin
and eyes.

SAF-T-DATA* STORAGE COLOR CODE: Blue (health)

===== COMPONENTS =====

SEE COMPONENT INFORMATION.

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

NFPA 704M RATING: 2-0-0

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding
fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective
equipment apparatus with full facepiece operated in positive pressure mode.
Move containers from fire area if it can be done without risk. Use water to
keep fire-exposed containers cool.

UNUSUAL FIRE & EXPLOSION HAZARDS: None identified.

TOXIC GASES PRODUCED: Hydrogen chloride, chlorine, phosgene

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 49 mg/m3 (10 ppm)

SHORT-TERM EXPOSURE LIMIT (STEL): Not Established

PERMISSIBLE EXPOSURE LIMIT (PEL): 9.78 Not Established

TOXICITY OF COMPONENTS:

ORAL RAT LD50 FOR CHLOROFORM: 908 mg/kg

SUBCUTANEOUS MOUSE LD50 FOR CHLOROFORM: 704 mg/kg

INTRAPERITONEAL MOUSE LD50 FOR CHLOROFORM: 1 g/kg

INHALATION MOUSE LC50 FOR CHLOROFORM: 28 g/m3

CARCINOGENICITY: NTP: Yes; IARC: Yes; Z LIST: Yes; OSHA REG: Yes

CARCINOGENICITY: This substance is listed as an ACGIH anticipated human carcinogen, a NTP anticipated human carcinogen, and an IARC possibly carcinogenic to humans (Group 2B).

REPRODUCTIVE EFFECTS: Reproductive toxicity test have been conducted to evaluate the potential adverse effects chloroform may have on reproduction and offspring of laboratory animals. Chloroform has been found to be embryotoxic and fetal toxic and has delayed fetal development in experimental animals. Studies in mice and rats have shown a marginal teratogenic (birth defects) effect. Studies in rabbits have not shown teratogenic effects.

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, drowsiness, irritation of upper respiratory tract, dryness of mouth and throat, unconsciousness, and may be fatal.

SKIN CONTACT: Irritation, prolonged contact may cause dermatitis.

EYE CONTACT: Irritation, may cause temporary corneal damage.

SKIN ABSORPTION: Rapid absorption.

INGESTION: Nausea, vomiting, gastrointestinal irritation, burns to mouth and throat, and may be fatal.

CHRONIC EFFECTS: Kidney damage, liver damage.

TARGET ORGANS: Liver, kidneys, heart, eyes, skin

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Kidney disorders, liver disorders, heart disorders, skin disorders.

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, if conscious, immediately induce vomiting.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Prompt action is essential.

SKIN CONTACT: In case of contact, flush skin with water.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE HAZARD CATEGORIES AND LISTS:

ACUTE: Yes; CHRONIC: Yes; FLAMMABILITY: No; PRESSURE: No; REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes; Contains Chloroform (RQ = 5,000 LBS, TPQ = 10,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes; Contains Chloroform (RQ = 5,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes; Contains Chloroform

GENERIC CLASS: Generic Class Removed from CFR: 7/1/91

TSCA INVENTORY: Yes

STATE LISTS: For products sold in the state of California, the state requires that we provide to users and their employees the following message:
WARNING: THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

===== REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat, flame, other sources of ignition, light, air, moisture.

INCOMPATIBLES: Strong bases, alkali metals, aluminum, magnesium, strong oxidizing agents.

DECOMPOSITION PRODUCTS: Chlorine, hydrogen chloride, phosgene

===== SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Flush spill area with water.

J. T. Baker SOLUSORB(R) solvent absorbent is recommended for spills of this product.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: U044 (Toxic Waste)

===== INDUSTRIAL PROTECTIVE EQUIPMENT =====

VENTILATION: Use general or local exhaust ventilation to meet TLV requirements.

RESPIRATORY PROTECTION: Respiratory protection required if airborne concentration exceeds TLV. At concentrations above 10 ppm, a self-contained breathing apparatus is advised.

EYE/SKIN PROTECTION: Safety goggles and face shield, uniform, protective suit, polyvinyl alcohol gloves are recommended.

===== STORAGE AND HANDLING PRECAUTIONS =====

SAF-T DATA* STORAGE COLOR CODE: Blue (health)

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

DOMESTIC (D.O.T.):

REPORTABLE QUANTITY: 10 LBS.
PACKAGING GROUP: III
LABELS: 6 HARMFUL store away from foodstuffs
REGULATORY REFERENCES: 49CFR 172.101

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: CHLOROFORM
HAZARD CLASS: 6.1
I.M.O. PAGE: 6103
UN: UN1888
MARINE POLLUTANTS: Yes
PACKAGING GROUP: II
LABELS: POISON
REGULATORY REFERENCES: 49CFR PART 176; IMDG Code

AIR (I.C.A.O.):

PROPER SHIPPING NAME: CHLOROFORM
HAZARD CLASS: 6.1
UN: UN1888
PACKAGING GROUP: II
LABELS: POISON
REGULATORY REFERENCES: 49CFR PART 175; ICAO

We believe the transportation data and references contained herein to be factual and the opinion of qualified experts. The data is meant as a guide to the overall classification of the product and is not package size specific, nor should it be taken as a warranty or representation for which the company assumes legal responsibility. The information is offered solely for your consideration, investigation, and verification. Any use of the information must be determined by the user to be in accordance with applicable Federal, State, and Local laws and regulations. See shipper requirements 49CFR 171.2, Certification 172.204, and employee training 49CFR 173.1(b).

U.S. CUSTOMS HARMONIZATION NUMBER: 29031300009

===== SPECIAL NOTES =====

NOTE: When handling liquid products, secondary protective containers must be used for carrying.

N/A = Not Applicable or Not Available;
N/E = Not Established.

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, Baker cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. Baker warrants that the chemical meets the specifications set forth on the label.

BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even

death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Baker will periodically revise this Material Safety Data Sheet.

NOTE: CHEMTREC, CANUTEC, and NATIONAL RESPONSE CENTER emergency telephone numbers are to be used ONLY in the event of CHEMICAL EMERGENCIES involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to Customer Service (1-800-JTBAKER) for assistance.

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* TRADEMARKS OF J.T. BAKER INC.

Approved by Quality Assurance Department.

STATE LISTS: For products sold in the state of California, the state requires that we provide to users and their employees the following message: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

HAZARDOUS POLYMERIZATION: Will not occur

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove foam area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Suitable for any general chemical storage area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations

promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of user or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label. VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

COPPER-CYANIDE

6-03-5610

01-03-5545

720-6

66-03-5400

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
120 ERIE BOULEVARD
SCHENECTADY, N.Y. 12305MATERIALS
INFORMATION
SERVICES

NO. 12

CUPROUS CYANIDE
Revision B

DATE May 1984

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CUPROUS CYANIDE

OTHER DESIGNATIONS: Copper Cyanide, Cupricin, Copper (I) Cyanide, CAS #000 544 923,
CuCN, GE Material D4M6

MANUFACTURER: Available from several suppliers, including:

E.I. Du Pont de Nemours & Co.

Wilmington, DE 19898

Tel: (302) 774-2421

Ashland Chem. Co.

P.O. Box 2219

Columbus, OH 43218

Tel: (606) 324-1133

SECTION II. INGREDIENTS AND HAZARDS

Cuprous Cyanide [CuCN]

%

HAZARD DATA

ca 100

8-hr TWA 5 mg/m³*
(as CN) (Skin)

and

8-hr TWA 1mg/m³*Copper salt dust or
mist (as Cu)*Current OSHA PEL and ACGIH (1983) TLV. for Cu and CN⁻¹ ion.
(Control of Cu at 1 mg/m³ will control CN⁻¹ ion
at < 0.5 mg/m³ for this complex salt.)

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg C --- Decomposes Specific gravity (H₂O=1) ----- 2.92Solubility in water ----- Insoluble* Melting point, deg C (in N₂) --- 473

Molecular weight ----- 89.56

Appearance & Odor: White to light tan fine powder. Odorless.

*Soluble in alkali cyanide solutions (NaCN, KCN) and in ammonium hydroxide by complex
ion formation.

SECTION IV. FIRE AND EXPLOSION DATA

Lower

Upper

Flash Point and Method

Auto-ignition Temp

Flammability Limits in Air

Non-flammable

This material does not burn; however, in a fire situation it can thermally decompose
and it can liberate flammable and toxic hydrogen cyanide gas when mixed with acid.
Avoid flushing solid with water directly into sewers or waterways or allowing mixing
with acid.
Firefighters should wear self-contained breathing apparatus and full protective clothing.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage
and handling conditions. It does not polymerize.

It is incompatible with strong acids and oxidizing agents such as nitrates. Diluted boiling

H₂SO₄ has hardly any affect on copper cyanide unless chlorides are present. Hot conc.H₂SO₄, cold conc. HCl and nitric acid will decompose it. Hot dilute HCl reacts to form
cuprous chloride and evolves toxic hydrogen cyanide gas. Avoid mixing with acid because
of possible hydrogen cyanide generation!

Thermal-oxidative decomposition can produce toxic fumes.

GENERAL ELECTRIC

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SECTION VI. HEALTH HAZARD INFORMATION	TLV 1 mg/m ³ (as Cu) (See Sect II)
<p>Cyanide can be fatal if excessively inhaled or ingested; however, its action is less rapid than that of alkali metal cyanides (MSDS #13 and 58) because the CN⁻ ion does not readily dissociate from the copper ion complex. (See Sect. V) Cyanide ion inhibits oxygen use by body cells by causing metabolic asphyxiation. Early symptoms include headache, weakness, confusion, nausea, and apparent respiratory stress.</p> <p>Skin contact can be irritating. Cyanide can penetrate intact skin. Eye contact causes burns.</p> <p>FIRST AID: (Begin treatment immediately! Notify physician.)</p> <p>Eye Contact: Flush with plenty of water for at least 15 min., including under eyelids.</p> <p>Skin Contact: Remove contaminated clothing. Flush affected area with water then wash using detergent.</p> <p>Inhalation: Remove to fresh air. Restore and/or support breathing as needed. Keep warm and at rest. Administer amyl nitrite perles by inhalation according to directions.*</p> <p>Ingestion: Give conscious victim a pint of 1% sodium thiosulfate soln. (or soapy water) and induce vomiting. Repeat. Use amyl nitrite perles by inhalation.*</p> <p>Obtain medical help promptly for treatment, observation & support after first aid.</p> <p>*LILLY Cyanide Antidote Kit.</p>	
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES	
<p>Notify safety personnel. Provide ventilation. Clean-up personnel need protection against contact and inhalation.</p> <p>Scoop up spilled solids into suitable containers for reclaim for disposal. Carefully sweep up (or vacuum up) small spills or residues, avoiding dusting conditions. Prevent contact with acids. Decontaminate trace cyanide in spill area with strong hypochlorite solution and flush to holding area for copper removal.</p> <p>DISPOSAL: Follow Federal, State, and local regulations for all effluents and disposals. Dispose of waste through a licensed handler and disposal facility. Burial in an approved, secure landfill has been suggested.</p> <p>AQUATIC TOXICITY TLM 96:10-lppm</p> <p>EPA (RCRA) HW No. P029 [40 CFR 261.33]</p>	
SECTION VIII. SPECIAL PROTECTION INFORMATION	
<p>Provide general and local exhaust ventilation to meet TLV requirements. Hood exhaust systems should have a face velocity of 100 lfm minimum. Approved dust filter respirators and self-contained breathing apparatus should be available for nonroutine and emergency use.</p> <p>Use dry cotton gloves for handling solid, and rubber gloves, apron and other protective clothing appropriate for conditions when handling solutions to prevent skin contact.</p> <p>Use chemical safety goggles with a faceshield where splashing is possible.</p> <p>Contaminated clothing should be removed promptly and laundered before reuse.</p> <p>Eyewash stations and washing facilities should be available to areas of use and handling.</p> <p>Personnel involved with cyanides should have close supervision, and training in hazards, safe handling, first aid procedures, and the proper use of antidote kits.</p>	
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS	
<p>Store in closed containers in a cool, dry, well-ventilated area separate from acids, weak alkalis and oxidizing agents. Protect containers from physical damage. Solutions of CuCN with KCN and NaCN are corrosive to the skin and eyes and may cause ulcerations which are slow to heal.</p> <p>Periodically inspect cyanide first aid kits in storage and use areas.</p> <p>Do not breathe dust or soln mist. Prevent contact with skin or eyes. Do not ingest.</p> <p>Wash hands thoroughly after handling. Do not smoke or eat in areas of storage or use.</p>	
<p>DOT Classification: POISON E I.D. No. UN1587 Label: POISON</p> <p>DATA SOURCE(S) CODE: 1-12, 14, 38, 47 (MSDS #58)</p>	
<p>Judgments as to the suitability of information for use for particular purposes are the responsibility of the purchaser. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company, assumes no responsibility for the accuracy, reliability, or suitability of such information for use for purposes other than those intended or for consequences of its use.</p>	APPROVALS: MIS CRD <i>J.M. Gibson</i>
	INDUST. HYGIENE SAFETY <i>J.M. Gibson</i> 5-24-84
	MEDICAL REVIEW: 15 June 1984

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM: 8*235-4085

MATERIALS INFORMATION SERVICES

NO. MSDS #409

CRESOL

Date December 1976

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CRESOL

DESCRIPTION: A mixture of isomeric cresols. Materials containing phenol and xylenols are also called "cresol" if less than 50% of the mixture distills above 204 C.

OTHER DESIGNATIONS: Methylphenol, Hydroxytoluene, Hydroxymethylbenzene, HOC₆H₄CH₃, GE Material D503 D and E, CAS# 001 319 773

MANUFACTURER: Material is available from several suppliers, including Koppers Company, Inc. Organic Materials Division

SECTION II. INGREDIENTS AND HAZARDS

%

HAZARD DATA

Cresol (o-, m-, and p-isomers)

66-03-5505 66-03-5504 66-03-5506 *

ca 100*

8-hr TWA 5 ppm (skin)**
or 22 mg/m³

*Some commercial "cresols" contain phenol and xylenols also.
**OSHA and ACGIH (1978) TLV.

NIOSH has proposed for regulatory purposes that mixtures of cresols and xylenols be considered "cresols". Also, NIOSH has proposed a 10-hr TWA of 2.3 ppm or 10 mg/m³ for both cresols and cresylic acids (the later includes higher boiling alkylated phenols).

Rat oral LD50
1454 mg/kg

SECTION III. PHYSICAL DATA*

Boiling point at 1 atm, deg C ----- 191-203 Specific gravity (H₂O=1) ----- 1.03-1.05

Vapor pressure at 38 C, mm Hg ----- <1 Melting point, deg C ----- ca 11-35

Water solubility, ca 25 C ----- Slightly soluble Molecular weight ----- 108.15

Appearance & Odor: A colorless, yellowish or pinkish liquid with a phenol-like odor.

*Properties for mixed cresol isomers.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

ca 178-202 F

ca 1038 F

Volume % at ca 300 F

> 1.0

Extinguishing Media: Water spray, dry chemical, foam, or carbon dioxide. A water spray can also be used to cool fire-exposed containers

This combustible liquid is a moderate fire hazard and a slight explosion hazard when exposed to heat or flame.

Toxic vapors and gases are emitted from this material in a fire situation; firefighters must wear self-contained breathing apparatus and full protective clothing.

SECTION V. REACTIVITY DATA

Cresol is stable under conditions of normal handling and use. It does not undergo hazardous polymerization.

This combustible material is incompatible with strong oxidizing agents; it can react exothermically with strong bases, with oleum, nitric acid, and chlorosulfonic acid.

Normal-oxidative degradation will produce toxic vapors and gases, including carbon monoxide.

SECTION VI. HEALTH HAZARD INFORMATION

TLV 5 ppm (See Sect. II)

It is corrosive to all body tissues it may contact. It is absorbed through the skin produce systemic effects (sometimes delayed). Damaged tissue will show white coloration then redness and brown or black with increased effect. Within 30 minutes, skin absorption can produce headache, dizziness, rapid respiration, and weak pulse with unconsciousness or even death resulting from extended contact. Severe injury or death can result from excessive inhalation exposure or from ingestion. Severe abdominal pain and nausea result from ingestion. **FIRST AID: CONSULT PHYSICIAN PROMPTLY**

Eye contact: Quickly flush the eyes with plenty of running water, including under the eye lids, for 15 minutes; then get prompt medical attention.

Skin contact: Remove cresol from skin quickly by washing exposed areas well with plenty of water plus soap until cresol odor is gone. (If contact is gross remove contaminated clothing and shoes under the safety shower). Further washing of skin with isopropyl alcohol or 20% glycerine in water, followed by water rinse, may be desirable. Obtain doctor's care promptly for all except the most minor contact.

Inhalation: Remove to fresh air. Have qualified person restore breathing and/or give oxygen if needed. Get physician's care promptly.

Ingestion: Give 3+ glasses of milk or a weak sodium bicarbonate solution to drink followed by egg whites. Induce vomiting. Repeat with water until vomitus is clear. Get physician's care.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel of large spills. Provide exhaust ventilation. Eliminate ignition sources. Exclude from area all except properly equipped clean-up personnel (see Sect. VIII). A water spray can be used to flush cresol away from sensitive areas. (Flush to retention area, not to drain!) Contain and collect material in approved container for disposal. Small spills can be picked up with absorbent solid or paper for disposal.

DISPOSAL: Burn scrap material (or its solution in a flammable solvent) using an approved incinerator, or label properly for disposal through a licensed waste disposal company. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

When practical, use cresol in completely enclosed systems to prevent exposure. Provide explosion-proof general ventilation and local exhaust ventilation to meet TLV requirements. When cresol is misted or heated, local exhaust ventilation is necessary. Use downdraft ventilation. Above the TLV use full facepiece respirator with organic canister or cartridge (up to 500 mg/m³) or air-supplied respirator (up to 1100 mg/m³) or a self-contained respirator for non-routine and emergency situations.

Use rubber gloves and additional protective equipment, such as rubber apron, rubber boots, acid-proof suit, etc., as circumstances of use require to prevent body contact. Use chemical safety goggles and in addition a face shield where splashing is possible.

Provide deluge-type safety shower and eyewash station immediately available in areas of use, handling, or storage of cresol. A hose delivering a stream of clean water is also desirable for washing and dilution.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in a cool, clean, well-ventilated place away from oxidizing agents and sources of ignition. Protect containers from physical damage. Avoid use of aluminum, copper, and brass alloys in contact with cresol in storage and process equipment.

Cresol is similar in its toxicity and reactivity to phenol.

Workers who handle cresol should be well trained in its hazards and well supervised. Pre-placement and periodic medical exams should be given and counsel given those with conditions which could be aggravated by cresol exposure.

(see also ASTM D3538)

DATA SOURCE(S) CODE: 2-6, 8, 12, 16, 19

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

APPROVALS: MIS, CRD

Industrial Hygiene and Safety

Corporate Medical Staff

J. H. 11/1/71
W. H. 11/1/71
George F. Marten M.D.

PORTS MSDS #: 6330

PRODUCT: CRESOL RED

PART NUMBER:

FORMULA: C21 H18 O5 S

KEYWORD: INDICATOR

PORTS NUMBER: 66-009-0995

PORTS MISC INFO:

PORTS RATING: HFR=420

MANUFACTURER:
ACROS ORGANICS
711 FORBES AVENUE
PITTSBURGH
PA

15219

PHONE: PHONE: 800-227-6701

EMERGENCY PHONE: 800-424-9300

==== Physical/Chemical Characteristics =====

Boiling Point. . . . NG

Melting Point. . . . EQ 536 F

NOTE: 280'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . . NG

Specific Gravity . . . NA

NOTE: NOT AVAILABLE.

Vapor Pressure NE

NOTE: NEGLIGIBLE.

Vapor Density. NG

Percent Volatiles. . . NG

Evaporation Rate . . . NE

NOTE: NEGLIGIBLE.

pH NG

Molecular Weight . . . NG

Viscosity. NG

Solubility in Water. APPRECIABLE.

Odor/Appearance/Other Characteristics:

REDDISH BROWN CRYSTALLINE SOLID / VOLATILE FRACTION BY WEIGHT: NEGLIGIBLE.

==== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLICABLE.

Flash Point, Open Cup . . . NA

NOTE: NOT APPLICABLE.

Fire Point. NG

Auto Ignition. NG

Explosive/Flammable Limits

Lower (LEL). NG

Upper (UEL). NG

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . . NOT GIVEN

Label NOT GIVEN

Proper Shipping Name . . . NOT GIVEN

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 12/01/94

===== Component Information =====

ESOL RED
OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: ~ 100
C.A.S. No.: 1733126

Note:
EXPOSURE LIMITS: NOT ESTABLISHED.

===== SECTION I. IDENTIFICATION =====

PRODUCT NAME: CRESOL RED

SYNONYM(S): 4,4'-(3H-2, 1-BENZOXATHIOL-3-YLIDENE) BIS (2-METHYLPHENOL)
5,5-DIOXIDE

FORMULA: C21 H18 O5 S

CAT NO(S): 108 2841; 108 2858; 108 2866

CHEM. NO(S): 00744

ACCESSION NUMBER: 900744

R-0099.100B
87-8664
900744*

DATE OF REVISION: 02/19/88

MODIFIED BY FISHER SCIENTIFIC: 12/94

FOR EMERGENCY TRANSPORTATION INFORMATION CALL CHEMTREC: 800-424-9300

MANUFACTURER'S NAME AND ADDRESS:

ACROS ORGANICS
711 FORBES AVENUE
PITTSBURGH, PA 15219-4785
1-800-ACROS-01 (1-800-227-6701)

===== SECTION II. PRODUCT AND COMPONENT HAZARD DATA =====

SEE COMPONENT INFORMATION.

===== SECTION III. PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== SECTION IV. FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: Not Applicable

EXTINGUISHING MEDIA: Water spray; Dry chemical; Carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Fire or excessive heat may produce hazardous decomposition products. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

===== SECTION V. REACTIVITY DATA =====

STABILITY: Stable

INCOMPATIBILITY: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion will produce carbon dioxide and probably carbon monoxide. Oxides of sulfur may also be present.

HAZARDOUS POLYMERIZATION: Will not occur.

===== SECTION VI. TOXICITY AND HEALTH HAZARD DATA =====

EXPOSURE LIMITS: Not established.

EXPOSURE EFFECTS:

INHALATION: Low hazard for usual industrial handling.

SKIN: Low hazard for usual industrial handling.

EYE: No specific hazard known. Contact may cause transient irritation.

INGESTION: Expected to be a low ingestion hazard.

FIRST AID:

INHALATION: Remove to fresh air following overexposure.

SKIN: Wash after each contact.

EYE: Flush eyes with plenty of water.

INGESTION: Drink 1-2 glasses of water. Seek medical attention.

===== SECTION VII. VENTILATION AND PERSONAL PROTECTION =====

VENTILATION AND RESPIRATORY PROTECTION: Good ventilation should be sufficient. Supplementary ventilation or respiratory protection may be needed in special circumstances.

SKIN AND EYE PROTECTION: Safety glasses recommended in industrial operations involving chemicals. If prolonged or repeated skin contact is necessary, gloves or other protection may be required.

===== SECTION VIII. SPECIAL STORAGE AND HANDLING PRECAUTIONS =====

Keep from contact with oxidizing materials.

===== SECTION IX. SPILL, LEAK, AND DISPOSAL PROCEDURES =====

Sweep up material and package for safe feed to an incinerator. Dispose by incineration or contract with licensed chemical waste disposal agency. Discharge, treatment, or disposal may be subject to federal, state or local laws.

The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

MERICHEM -- 'CRESYLIC ACID' - CRESYLIC ACID, TECHNICAL
 MATERIAL SAFETY DATA SHEET
 NSN: 6810002649019
 Manufacturer's CAGE: MERIC
 Part No. Indicator: A
 Part Number/Trade Name: CRESYLIC ACID

General Information

Item Name: CRESYLIC ACID, TECHNICAL
 Company's Name: MERICHEM COMPANY
 Company's Street: 1914 HADEN ROAD
 Company's City: HOUSTON
 Company's State: TX
 Company's Country: US
 Company's Zip Code: 77015
 Company's Emerg Ph #: 713-455-1311/800-424-9300 (CHEMTREC)
 Company's Info Ph #: 713-455-1311
 Distributor/Vendor # 1: INLAND PACKAGING
 Distributor/Vendor # 1 Cage: 66172
 Record No. For Safety Entry: 001
 Tot. Safety Entries This Stk#: 005
 Status: SE
 Date MSDS Prepared: 01JUL89
 Safety Data Review Date: 08NOV89
 Supply Item Manager: CX
 MSDS Serial Number: BHBYK
 Specification Number: MIL-C-1324B
 Hazard Characteristic Code: C1
 Unit Of Issue: GL
 Unit Of Issue Container Qty: 1 GALLON
 Type Of Container: CAN
 Net Unit Weight: 8.6 POUNDS

Ingredients/Identity Information

Proprietary: NO
 Ingredient: PHENOL
 Ingredient Sequence Number: 01
 Percent: 7.1
 NIOSH (RTECS) Number: SJ3325000
 CAS Number: 108-95-2
 OSHA PEL: S, 5 PPM
 ACGIH TLV: S, 5 PPM; 8990
 Other Recommended Limit: NOT ESTABLISHED

CAS# 108-95-2
 MSDS Serial BHBYK
 Cresylic Acid

000000

Proprietary: NO
 Ingredient: CRESOL, ALL ISOMERS (CRESYLIC ACID) (SARA III)
 Ingredient Sequence Number: 02
 Percent: 38.2
 NIOSH (RTECS) Number: GO5950000
 CAS Number: 1319-77-3
 OSHA PEL: S, 5 PPM
 ACGIH TLV: S, 5 PPM; 9192
 Other Recommended Limit: NOT ESTABLISHED

 Proprietary: NO
 Ingredient: XYLENOL (SARA III)
 Ingredient Sequence Number: 03
 Percent: 33.1
 NIOSH (RTECS) Number: ZE5425000
 CAS Number: 1300-71-6
 OSHA PEL: NOT ESTABLISHED
 ACGIH TLV: NOT ESTABLISHED
 Other Recommended Limit: NOT ESTABLISHED

 Proprietary: NO
 Ingredient: O-ETHYLPHENOL (2-ETHYLPHENOL) (% SHOWN IS FOR THE SUM OF ORTHO
 1.3%,META 7.8% AND PARA 4.4%)
 Ingredient Sequence Number: 04
 Percent: 13.5
 NIOSH (RTECS) Number: SL4025000
 CAS Number: 90-00-6
 OSHA PEL: NOT ESTABLISHED
 ACGIH TLV: NOT ESTABLISHED
 Other Recommended Limit: NOT ESTABLISHED

 Proprietary: NO
 Ingredient: ALKYLATED PHENOLS
 Ingredient Sequence Number: 05
 Percent: 8.1
 NIOSH (RTECS) Number: 1002020AP
 OSHA PEL: UNKNOWN
 ACGIH TLV: UNKNOWN
 Other Recommended Limit: UNKNOWN

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: AMBER LIQUID.ANTISEPTIC SWEET ODOR.
 Boiling Point: 374F,190C
 Melting Point: <0F,<-17.8C
 Vapor Pressure (MM Hg/70 F): 1

Vapor Density (Air=1): 3.86
Specific Gravity: 1.03
Solubility In Water: 5%
pH: 5.5

=====
Fire and Explosion Hazard Data
=====

Flash Point: >175F,>79C
Flash Point Method: TCC
Lower Explosive Limit: 1.5
Extinguishing Media: USE CARBON DIOXIDE, FOAM, DRY CHEMICAL, OR WATER FOG.
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA &
FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO
COOL NEARBY CONTAINERS EXPOSED TO FIRE.
Unusual Fire And Expl Hazrds: MAY GENERATE TOXIC GASES ON COMBUSTION.
=====

Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE, INCOMPLETELY
BURNED CARBON PRODUCTS.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE
=====

Health Hazard Data
=====

LD50-LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: THIS MATERIAL IS CORROSIVE, IRRITANT, TOXIC
AND SENSITIZER. TARGET ORGANS ARE: LUNGS, LIVER, EYES, KIDNEYS, SKIN, MUCOUS
MEMBRANES AND NERVOUS SYSTEM.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE OF THE COMPOUNDS IN THIS PRODUCT IS
LISTED BY IARC, NTP, OR OSHA AS A CARCINOGEN.
CHEMICAL BURNS. WHITE WRINKLED DISCOLORATION YIELDING SERIOUS BURNS OR
SYSTEMIC POISONING. IRRITATION OF EYES, NOSE AND THROAT. MAY BE FATAL.
INGESTION: SYSTEMIC POISONING. BURNING PAIN FROM MOUTH TO STOMACH. FATAL.
Med Cond Aggravated By Exp: PERSONS WITH A HISTORY OF AILMENTS OR WITH A
PRE-EXISTING DISEASE INVOLVING THE EYES, SKIN, OR RESPIRATORY TRACT MAY BE
AT INCREASED RISK FROM EXPOSURE.

Emergency/First Aid Proc: INHALATION:REMOVE TO FRESH AIR. RESUSCITATE IF NOT BREATHING. GET MEDICAL ATTENTION. EYES:IMMEDIATELY FLUSH WITH PLENTY OF REMOVE CONTAMINATED CLOTHING. WASH WITH SOAP AND WATER. IF IRRITATION PERSISTS, GET MEDICAL ADVICE. INGESTION:DO NOT INDUCE VOMITING. GIVE LARGE AMOUNTS OF MILK OR WATER.NOTHING BY MOUTH IF UNCONSCIOUS.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE PERSONNEL.WEAR SCBA AND PROTECTIVE CLOTHING AND EQUIPMENT.ABSORB IN INERT MATERIAL AND PLACE IN A CLOSED METAL CONTAINER.

Neutralizing Agent: NOT APPLICABLE.

Waste Disposal Method: NOTIFY YOUR LOCAL ENVIRONMENTAL OFFICER.DISPOSAL SHOULD BE MADE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

Precautions-Handling/Storing: STORE IN A COOL, DRY, WELL VENTILATED AREA. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. PROTECT CONTAINERS FROM PHYSICAL DAMAGE.

Other Precautions: DO NOT TAKE INTERNALLY. DO NOT BREATHE MIST. AVOID PROLONGED OR REPEATED BREATHING OF VAPOR. AVOID CONTACT WITH EYES. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. FOR INDUSTRIAL USE ONLY.

Control Measures

Respiratory Protection: IF VENTILATION DOES NOT MAINTAIN INHALATION EXPOSURES BELOW PEL(TLV), USE NIOSH/MSHA APPROVED ORGANIC VAPOR CARTRIDGE AND DUST/MIST PRE-FILTER RESPIRATORS AS PER CURRENT 29 CFR 1910.134, INSTRUCTIONS/WARNINGS AND NIOSH-RESPIRATOR SELECTION.

Ventilation: MECHANICAL (GENERAL) ROOM VENTILATION IS NORMALLY ADEQUATE. LOCAL EXHAUST MAY BE REQUIRED IF WORK AREA NOT VENTED.

Protective Gloves: NEOPRENE, NITRILE, PVC OR NATURAL RUBBER

Eye Protection: SAFETY GOGGLES WITH OPTIONAL FACE SHIELD

Other Protective Equipment: EYE WASH STATION AND SAFETY SHOWER. CHEMICAL BOOTS,SLICKER SUIT.

Work Hygienic Practices: OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES. DO NOT WEAR CONTAMINATED CLOTHING OR FOOTWEAR.

Suppl. Safety & Health Data: AVOID PROLONGED OR REPEATED EXPOSURE. DO NOT GET ON SKIN OR IN EYES. DO NOT BREATHE VAPORS OR MISTS.

Transportation Data

Trans Data Review Date: 89312

DOT PSN Code: DYZ

DOT Proper Shipping Name: CRESOLS

DOT Class: 6.1

DOT ID Number: UN2076
 DOT Pack Group: II
 DOT Label: POISON, CORROSIVE
 IMO PSN Code: EUD
 IMO Proper Shipping Name: CRESYLIC ACID
 IMO Regulations Page Number: 6114
 IMO UN Number: 2022
 IMO UN Class: 6.1
 IMO Subsidiary Risk Label: CORROSIVE
 IATA PSN Code: HPR
 IATA UN ID Number: 2022
 IATA Proper Shipping Name: CRESYLIC ACID
 IATA UN Class: 6.1
 IATA Subsidiary Risk Class: 8
 IATA Label: TOXIC & CORROSIVE
 AFI PSN Code: HPM
 AFI Prop. Shipping Name: CRESOLS
 AFI Class: 6.1
 AFI ID Number: UN2076
 AFI Pack Group: II
 AFI Label: POISON
 AFI Basic Pac Ref: 10-9

=====

Disposal Data

=====

=====

Label Data

=====

Label Required: YES
 Technical Review Date: 08NOV89
 Label Status: G
 Common Name: CRESYLIC ACID, TECHNICAL
 Signal Word: DANGER!
 Special Hazard Precautions: RAPIDLY ABSORBED THROUGH SKIN! CAUSES SEVERE
 BURNS. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. AVOID BREATHING VAPOR. DO
 NOT TAKE INTERNALLY. TARGET ORGANS ARE LUNG, LIVER, EYES, KIDNEYS, SKIN, MUCOUS
 MEMBRANES AND NERVOUS SYSTEM.
 Protect Eye: Y
 Protect Skin: Y
 Protect Respiratory: Y
 Label Name: MERICHEM COMPANY
 Label Street: 1914 HADEN ROAD
 Label City: HOUSTON
 Label State: TX
 Label Zip Code: 77015
 Label Country: US

Label Emergency Number: 713-455-1311/800-424-9300 (CHEMTREC)

Year Procured: 1985

=====
URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 6608

PRODUCT: CS INK CS-174-5

PART NUMBER:

FORMULA:

KEYWORD: INK

PORTS NUMBER: 66-009-0997

PORTS MISC INFO:
CS-174-5

PORTS RATING: HFR=210

MANUFACTURER:
AM MULTIGRAPHICS
1800 WEST CENTRAL ROAD
MT. PROSPECT
IL60056
PHONE: PHONE:
EMERGENCY PHONE: 708-870-5121

===== Physical/Chemical Characteristics =====

Boiling Point. . . . GT 200 F
Melting Point. . . . NA
Freezing Point. . . . NG
Pour Point. . . . NG
Softening Point. . . NG

NOTE: NOT APPLICABLE.

Specific Gravity . . GT 1.0
Vapor Pressure . . . NA
Vapor Density. . . . NA
Percent Volatiles. . NG
Evaporation Rate . . LT 1
pH NA
Molecular Weight . . NG
Viscosity. NG

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

NOTE: BUAC=1, SLOWER.

NOTE: NOT APPLICABLE.

Solubility in Water. < 0.1%.
Odor/Appearance/Other Characteristics:
BLACK PASTE, OILY ODOR.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 260 F
Flash Point, Open Cup . . . NG
Fire Point. NG
Auto Ignition. NG
Explosive/Flammable Limits
Lower (LEL). NE
Upper (UEL). NE

NOTE: PMCC.

NOTE: NOT ESTABLISHED.

NOTE: NOT ESTABLISHED.

Shipping Regulations

UN/NA Number. NE
D.O.T. Hazard Class. . . NOT ESTABLISHED
Label NONE REQUIRED
Proper Shipping Name . . NOT REGULATED

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/95

===== Component Information =====

MODIFIED ROSIN ESTERS & HYDROCARBON RESINS

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 20 25
C.A.S. No.: NOT GIVEN

Note:

FOR ALL COMPONENTS: NE = NOT ESTABLISHED; ACGIH STEL.

CARBON BLACK

OSHA PEL (PPM):
OSHA PEL (MG/M3): 3.5
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 20 25
C.A.S. No.: 1333864

Note:

FOR ALL COMPONENTS: NIOSH (TWA & STEL): NE.

PETROLEUM DISTILLATE

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 20 25
C.A.S. No.: NOT GIVEN

Note:

SEVERELY HYDROTREATED / CAS #: NE.

TECHNICAL WHITE OIL

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 10 15
C.A.S. No.: 8042475

Note:

PEL: AS OIL MIST.

VEGETABLE OILS

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 3 5
C.A.S. No.: NOT GIVEN

Note:

PEL: AS OIL MIST / CAS #: NE.

VEGETALBE OIL ALKYDS
OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 3 5
C.A.S. No.: NOT GIVEN

Note:
NON-HAZARDOUS / CAS # NE.

BODIED LINSEED OIL
OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 3 5
C.A.S. No.: 67746081

Note:
NON-HAZARDOUS.

ANTI-OXIDANT COMPOUND
OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 3 5
C.A.S. No.: NOT GIVEN

Note:
NON-HAZARDOUS / CAS #: NE.

===== I. PRODUCT IDENTIFICATION =====

TRADE NAME: CS Inks

NAME/SYNONYM: Lithographic Ink

PART NUMBERS:

CS-174-9
CS-174-C
CS-174-5

MSDS CODE NO.: 031

DATE (REVISED): March 1, 1995

EMERGENCY PHONE - DAY: (708) 870-5121
EMERGENCY PHONE - NIGHT: (708) 398-1900

MANUFACTURER/DISTRIBUTOR'S NAME AND ADDRESS:

AM MULTIGRAPHICS
1800 WEST CENTRAL ROAD
MT. PROSPECT, ILLINOIS 60056

===== II. INGREDIENTS - CONFIDENTIAL INFORMATION FOR =====

II. INGREDIENTS - CONFIDENTIAL INFORMATION FOR SAFETY/HEALTH USE ONLY

SEE COMPONENT INFORMATION.

CHEMICAL NAME

NTP, IARC, OSHA

CARCINOGEN

*Modified rosin esters & hydrocarbon resins
Carbon black***
Petroleum distillate (severely hydrotreated)
Technical white oil
Vegetable oils
*Vegetable oil alkyds
*Bodied linseed oil
*Anti-oxidant compound

No
No
No
No
No
No
No
No

*Non-hazardous as defined by 29CFR1910.1200.

**As oil mist.

***When wetted with vehicle, as in this product, it is no longer considered to be a health hazard.

===== III. PHYSICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== IV. FIRE AND EXPLOSION HAZARD =====

FLASH POINT: 260°F PMCC

FLAMMABLE LIMITS:

LEL: N/E

UEL: N/E

EXTINGUISHING MEDIA: Foam, CO2, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURE: Water can be used to keep material cool.
Self-contained breathing apparatus may be required.

UNUSUAL FIRE/EXPLOSION HAZARDS: Dense smoke generated while burning.

===== V. REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Excess heat.

INCOMPATIBILITY, MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Dense smoke and possible carbon dioxide and carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

===== VI. SPILL OR LEAK PROCEDURE/WASTE DISPOSAL =====

Wipe up spills with rags. Dispose of rags in containers for oily waste.

DISPOSAL: Landfill or incineration in accordance with local, state and federal regulations for non-hazardous waste.

===== VII. HEALTH HAZARD DATA =====

ROUTES OF ENTRY, SIGNS AND SYMPTOMS OF OVEREXPOSURE, ACUTE AND CHRONIC

EFFECTS:

EYE: Contact may cause burning and irritation.

SKIN: Prolonged or repeated exposure may cause irritation or dermatitis.

INHALATION: Excessive inhalation of vapors may cause headaches, dizziness, drowsiness and nausea.

INGESTION: May cause irritation or gastric disturbance.

TARGET ORGANS: Skin

CARCINOGENICITY: Ingredients not found in NTP, OSHA or IARC.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY NORMAL EXPOSURE: Some skin disorders, such as dermatitis.

EMERGENCY AND FIRST AID:

EYE: Rinse with water, at least 15 minutes. If irritation persists, consult a physician.

SKIN: Wash with mild soap and water.

INHALATION: Remove to fresh air. Apply respiration or oxygen if needed. Consult a physician.

INGESTION: DO NOT induce vomiting. Get medical aid.

===== VIII. SPECIAL PROTECTION INFORMATION =====

RESPIRATION PROTECTION: Not normally required.

VENTILATION: General ventilation as per local or state regulations.

PROTECTIVE GLOVES: Not required

EYE PROTECTION: Optional

OTHER PROTECTION: Apron, footwear, impervious clothing as needed to avoid excessive skin contact.

===== IX. SPECIAL PRECAUTIONS =====

HANDLING AND STORAGE: Keep containers closed when not in use. Keep away from heat, sparks and open flame.

OTHER: Wash hands and face with soap and water before eating. Do not reuse container. Keep from reach of children. For Commercial/Industrial use only.

===== X. ENVIRONMENTAL DATA =====

HAZARDOUS SUBSTANCE (40 CFR 372: SARA Sec. 313): None

REPORTABLE QUANTITY (40 CFR 355: SARA Sec. 302): None

HAZARDOUS SUBSTANCE (40 CFR 302: CERCLA Table 302.4): None

RCRA WASTE NUMBER: None

VOLATILE ORGANIC COMPOUNDS: 0.42 lbs/gal or 51 g/l (EPA method 24)

SARA HAZARD CLASS:

ACUTE: No

CHRONIC: No
FIRE: No
PRESSURE: No
REACTIVITY: No

H.M.I.S. RATING:

HEALTH: 1
FLAMMABILITY: 1
REACTIVITY: 0

===== XI. DOT SHIPPING INFORMATION =====

SURFACE: Not Regulated

AIR: Not Regulated

PROPER SHIPPING NAME: N/A

UN: N/E

CLASS: N/E

LABELS: None required

NOTE: The chemicals in this product are listed on the TSCA inventory.

===== XII. DISCLAIMER =====

The information contained in this Material Safety Data Sheet is furnished without warranty of any kind. AM Multigraphics believes that the information contained herein is current as of the revision data of this MSDS. Since the conditions of use of this product are beyond the control of AM Multigraphics, it is the obligation of the user to determine the conditions for safe use.

N/A = Not Applicable
N/E = Not Established

PORTS MSDS #: 309

PRODUCT: STANDARD, INORGANIC PRIORITY POLLUTANT-SOIL(CYANIDE)

PART NUMBER:

FORMULA:

KEYWORD: STANDARD

PORTS NUMBER: 00190038-40

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=100

MANUFACTURER:
ENVIRONMENTAL RESOURCES ASSOCIATION
5540 MARSHALL ST.
ARVADA
CO80002
PHONE: PHONE: 303-431-8454
EMERGENCY PHONE: 303-431-8454

===== Physical/Chemical Characteristics =====

Boiling Point. . . . NA
Melting Point. . . . NA
Freezing Point . . . NG
Pour Point NG
Softening Point. . . NG

Specific Gravity . . EQ 1.20

Vapor Pressure . . . NA

Vapor Density. . . . GT 1

NOTE: HEAVIER.

Percent Volatiles. . NG

Evaporation Rate . . NA

pH NA

Molecular Weight . . NG

Viscosity. NG

Solubility in Water. COMPLETE.

Odor/Appearance/Other Characteristics:

LIGHT BROWN SOIL, ODORLESS.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . N*

NOTE: NOT IGNITABLE.

Flash Point, Open Cup . . . N*

NOTE: NOT IGNITABLE.

Fire Point. NG

Auto Ignition. NG

Explosive/Flammable Limits

Lower (LEL). NA

Upper (UEL). NA

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 7/29/94

===== Component Information =====

BLANK SOILS

OSHA PEL (PPM): NA
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NA
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: NOT GIVEN

BLANK SANDS

OSHA PEL (PPM): NA
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NA
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: NOT GIVEN

===== IDENTIFICATION =====

IDENTITY: Blank Soil and Sand (laboratory standard)

EMERGENCY TEL: 303) 431-8454

INFO. TEL. NUM: 303) 431-8454

DATE: JULY 29, 1994

MANUFACTURER'S NAME AND ADDRESS:

ENVIRONMENTAL RESOURCE ASSOCIATES
5540 MARSHAL STREET
ARVADA, COLORADO 80002

===== HAZARDOUS INGREDIENTS/IDENTITY =====

SEE COMPONENT INFORMATION.

Blank Soil and Sand products consist of either precleaned soil or silica sand. They do not contain any hazardous components at a concentration that might be expected to cause any toxic effects under ordinary conditions of use and handling.

===== PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (METHOD): Not ignitable

FLAMMABLE LIMITS:

LEL: N/A
UEL: N/A

EXTINGUISHING MEDIA: None

SPECIAL FIRE PROCEDURES: None

UNUSUAL FIRE/EXPLOSION HAZARDS: None

==== REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: None

HAZARDOUS POLYMERIZATION: No

CONDITIONS TO AVOID: None

===== HEALTH HAZARD DATA =====

ROUTE(S) OF ENTRY:

INHN: Yes

SKIN: Yes

INGESTION: Yes

HEALTH HAZARDS:

CARCINOGENICITY:

NTP: NO

IARC MONOGRAPHS: No

OSHA REGULATED: No

SIGNS AND SYMPTOMS: Irritation of nasal passages, sneezing, tearing of eyes

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Dermatitis,
Bronchitis, asthma

EMERGENCY AND FIRST AID PROCEDURES: Remove from exposure. Wash skin and eyes
with clear water.

===== PRECAUTIONS FOR SAFE HANDLING AND USE =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Collect the
spilled material being careful to avoid creating excessive dust.

WASTE DISPOSAL METHOD: Dispose of as non-hazardous waste

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Protect from rough handling
might cause breakage

OTHER PRECAUTIONS: Avoid breathing dust

===== CONTROL MEASURES =====

RESPIRATORY PROTECTION (SPECIFY TYPE): Use adequate ventilation

VENTILATION:

LOCAL EXHAUST: Adequate Vent

Mechanical hood

SPECIAL:

OTHER:

PROTECTIVE GLOVES: Neoprene or Vinyl

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Laboratory coat and closed shoes

WORK/HYGIENIC PRACTICES: Wash hands with soap and warm water

PORTS MSDS #: 5713

PRODUCT: CYCLOHEXANONE

PART NUMBER:

FORMULA: C6H10O

KEYWORD: SOLVENT

PORTS NUMBER: 03-403-2080; 66-003-5660

PORTS MISC INFO:

01-03-2080

PORTS RATING: HFR=321

MANUFACTURER:

HACH CO.

P.O. BOX 907

AMES

IA

50010

PHONE: 800-227-4224

EMERGENCY PHONE: 303-623-5716

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 312.08 F

NOTE: 155.6'C.

Melting Point. . . . EQ -52.6 F

NOTE: -47'C.

Freezing Point. . . . NG

Pour Point. . . . NG

Softening Point. . . . NG

Specific Gravity . . . EQ .948

Vapor Pressure . . . EQ 136

NOTE: MM @ 100'C.

Vapor Density. . . . EQ 3.4

Percent Volatiles. . . NG

Evaporation Rate . . . ND

pH ND

NOTE: NOT DETERMINED.

Molecular Weight . . . NG

Viscosity. NG

Solubility in Water. SLIGHTLY SOLUBLE. ACID: ND; OTHER: MOST ORGANIC SOLVENT

Odor/Appearance/Other Characteristics:

PEPPERMINT ODOR / WHITE TO YELLOW, OILY LIQUID.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 111 F

NOTE: 44'C.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 788 F

NOTE: 420'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.1

Upper (UEL). EQ 9.4

Shipping Regulations

UN/NA Number. NA1915

D.O.T. Hazard Class. . . . 3

Label NOT GIVEN

Proper Shipping Name . . . CYCLOHEXANONE

Preparer/Contact Information: REGULATORY AFFAIRS DEPT.

Date Prepared/Revised 1/01/95

===== Component Information =====

CYCLOHEXANONE

OSHA PEL (PPM): 25
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 25
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: 108941

Note:

PEL & TLV: SKIN.

===== PRODUCT IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: Cyclohexanone

CAS NO: 108-94-1

CHEMICAL NAME: Cyclohexanone

CHEMICAL FAMILY: Ketones

CAT. NO.: 14033

EMERGENCY TELEPHONE & ROCKY MOUNTAIN POISON CTR.: (303) 623-5716

MANUFACTURER NAME AND ADDRESS:

HACH CO.
P.O. BOX 907
AMES, IA 50010

FOR ASSISTANCE, CONTACT: (800) 227-4224

REGULATORY AFFAIRS DEPT.
PO BOX 907 AMES, IA 50010
(800) 227-4224

MANUFACTURER'S NAME AND ADDRESS:

HACH COMPANY
PO BOX 907
AMES, IA 50010

===== INGREDIENTS =====

SEE COMPONENT INFORMATION.

CYCLOHEXANONE

SARA: NOT LISTED
RCRA: U057
HAZARD: Combustible; Causes eye irritation; Moderately toxic

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

SOLUBILITY IN:

ACID: Not determined
OTHER: Most organic solvents.

ETAL CORROSIVITY:

ALUMINUM: ND
STEEL: ND

STABILITY: Stable

STORAGE PRECAUTIONS: Store in a cool, dry, dark place.

===== FIRE, EXPLOSION HAZARD AND REACTIVITY DATA =====

FLASH POINT: 44'C; 111'F

METHOD: CLOSED CUP

FLAMMABILITY LIMITS:

LOWER: 1.1%
UPPER: 9.4%

SUSCEPTIBILITY TO SPONTANEOUS HEATING: None

SHOCK SENSITIVITY: None

AUTOIGNITION PT.: 420'C; 788'F

EXTINGUISHING MEDIA: Dry chemical, alcohol foam or carbon dioxide.

FIRE/EXPLOSION HAZARDS: Combustible; may react violently with oxidizers.

HAZARDOUS DECOMP. PRODUCTS: May emit toxic fumes of carbon monoxide and carbon dioxide.

OXIDIZER: No

NFPA CODES:

HEALTH: 1
FLAMMABILITY: 2
REACTIVITY: 0

CONDITIONS TO AVOID: Extreme temperatures; contact with oxidizers such as nitric acid, hydrogen peroxide, reducers, acids and alkalies.

===== HEALTH HAZARD DATA =====

THIS PRODUCT MAY BE: Irritating to eyes, skin and respiratory tract.

ACUTE TOXICITY:

Oral rat LD50 = 1535 mg/kg = Moderately toxic;
Inhalation rat LC50 = 8000 ppm/4 hours;
Skin rabbit LD50 = 948 mg/kg

ROUTES OF EXPOSURE: Ingestion, inhalation, skin absorption.
TARGET ORGANS: Kidneys, liver

CHRONIC TOXICITY: Not determined

ROUTES OF EXPOSURE: Not determined
TARGET ORGANS: Kidneys, liver

CANCER INFORMATION: Experimental mutagen

ROUTES OF EXPOSURE: Not determined
TARGET ORGANS: Not determined

EXPOSURE: Causes severe eye and mild skin irritation. May cause nausea, vomiting, diarrhea, headaches, weakness, dizziness, drowsiness, loss of coordination, central nervous system depression, consciousness, coma, death.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing liver and kidney conditions.

===== PRECAUTIONARY MEASURES =====

Avoid contact with eyes, skin and clothing.

Do not breathe vapor.

Wash thoroughly after handling.

Keep away from heat, sparks and open flame.

Keep away from oxidizers.

PROTECTIVE EQUIPMENT: Fume hood, lab grade goggles, disposable latex gloves, lab coat.

===== FIRST AID =====

EYE AND SKIN CONTACT: Immediately flush eyes and skin with water for 15 minutes. Remove contaminated clothing. Call physician.

INGESTION: Do NOT induce vomiting. Give 1 - 2 glasses of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. Give artificial respiration if necessary. Call physician.

===== SPILL AND DISPOSAL PROCEDURES =====

IN CASE OF SPILL OR RELEASE: Remove all sources of ignition. Absorb spill with non-reactive absorbent. Do not breathe fumes. Incinerate material in an EPA-approved facility

DISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.

===== TRANSPORTATION DATA =====

D.O.T. PROPER SHIPPING NAME: Cyclohexanone

HAZARD CLASS: 3
ID: UN1915
GROUP: III

I.C.A.O. PROPER SHIPPING NAME: Cyclohexanone

HAZARD CLASS: 3
ID: UN1915
GROUP: III

I.M.O. PROPER SHIPPING NAME: Cyclohexanone

HAZARD CLASS: 3.3
ID: UN1915
GROUP: III

===== REFERENCES =====

- 1) TLV's Threshold Limit Values and Biological Exposure Indices for 1988-89. American Conference of Governmental Industrial Hygienists, 1988.
- 2) Air Contaminants, Federal Register, Vol. 54, No. 12, Thursday, January 19, 1989, pp. 2332-2983.
- 3) Sax, N. Irving. Dangerous Properties of Industrial Materials, 6th Ed. New York: Van Nostrand Reinhold Co. 1984.
- 4) The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989
- 5) Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991.
- 6) Technical judgment
- 7) NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April 1987.
- 8) Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York; a Wiley-Interscience Publication, 1981.

===== SPECIAL NOTES =====

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY, WORLD HEADQUARTERS, PO BOX 389, LOVELAND, CO 80539

HACH EUROPE, BP 229, B5000 NAMUR 1, BELGIUM

(C) HACH CO. 1995

MULTIGRAPHICS DIV; AM INTERNATIONAL -- DEGLAZING SOLV. #S 83-0-105532, 83-9-105533 -

MATERIAL SAFETY DATA SHEET

SN: 6850002011269

CAS# 71-55-6

Manufacturer's CAGE: 09177

MSDS Ser BJMBQ

Part No. Indicator: B

Deglazing Solv.

Part Number/Trade Name: DEGLAZING SOLV. #S 83-0-105532, 83-9-105533

General Information

Item Name: LITHOGRAPHING FOUNTAIN SOLUTION

Company's Name: MULTIGRAPHICS DIVISION; AM INTERNATIONAL, INC.

Company's Street: 1800 WEST CENTRAL ROAD

Company's City: MT. PROSPECT

Company's State: IL

Company's Country: US

Company's Zip Code: 60056-2293

Company's Emerg Ph #: 312-870-5121 (DAY) 398-1900 (NIGHT)

Company's Info Ph #: 312-870-5121

Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 004

Status: SE

Date MSDS Prepared: 01APR89

Safety Data Review Date: 14JAN91

Supply Item Manager: CX

MSDS Preparer's Name: NORMAN J. ENGLBRECHT

MSDS Serial Number: BJMBQ

Hazard Characteristic Code: N1

Ingredients/Identity Information

Proprietary: NO

Ingredient: METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE) (SARA III)

Ingredient Sequence Number: 01

Percent: 96%

NIOSH (RTECS) Number: KJ2975000

CAS Number: 71-55-6

OSHA PEL: 350 PPM/450 STEL

ACGIH TLV: 350 PPM/450 STEL; 9192

Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR COLORLESS LIQUID WITH ETHERAL ODOR.

Boiling Point: 154F, 68C

Vapor Pressure (MM Hg/70 F): 120

Vapor Density (Air=1): 4.54

Specific Gravity: 1.31

Decomposition Temperature: UNKNOWN

Evaporation Rate And Ref: 0.35 (BUTYL ACETATE= 1)

Solubility In Water: NEGLIGIBLE

Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Flash Point: NONE

Flash Point Method: TCC

Lower Explosive Limit: 7

Upper Explosive Limit: 15

Extinguishing Media: USE WATER FOG, CARBON DIOXIDE OR DRY CHEMICAL.

Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT FOR POSSIBLE EXPOSURE TO HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

Unusual Fire And Expl Hazrds: VAPORS CONCENTRATED IN A CONFINED OR POORLY VENTILATED AREA CAN BE IGNITED UPON CONTACT WITH A HIGH ENERGY SPARK, FLAME, OR HIGH HEAT SOURCE.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, AND OPEN FLAMES

Materials To Avoid: CAUSTICS, OXIDIZERS AND ALUMINUM.

Hazardous Decomp Products: HYDROGEN CHLORIDE AND POSSIBLE TRACE OF
ISOGENE.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT APPLICABLE

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Health Hazard Data

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LD50-LC50 Mixture: UNKNOWN

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: EYE IRRITANT, MILDLY IRRITATING TO SKIN,
WILL DEFAT SKIN. SLIGHTLY TOXIC, ANASTHETIC EFFECTS MAY OCCUR IN RANGES OF
1000 PPM IF INHALED. NOT SIGNIFICANTLY TOXIC IF INGESTED.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE OF THE COMPOUNDS IN THIS PRODUCT IS
LISTED BY IARC, NTP, OR OSHA AS A CARCINOGEN.

Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.

Med Cond Aggravated By Exp: INCREASED SENSITIVITY TO ADRENALIN MAY BE
CAUSED BY OVEREXPOSURE.

Emergency/First Aid Proc: INHALATION: REMOVE TO FRESH AIR. RESUSCITATE IF
NOT BREATHING. GET MEDICAL ATTENTION. EYES: IMMEDIATELY FLUSH WITH PLENTY OF
REMOVE CONTAMINATED CLOTHING. WASH WITH SOAP AND WATER. IF IRRITATION
PERSISTS, GET MEDICAL ADVICE. INGESTION: DO NOT INDUCE VOMITING. GIVE MILK
OR USP MINERAL OIL. GET IMMEDIATE MEDICAL ATTENTION.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: SMALL SPILL: WIPE/SOAK UP WITH TOWELS OR
RAGS. LARGE SPILL: WEAR SUITABLE MASK - EVAPORATES RAPIDLY. DO NOT POUR
DOWN DRAIN.

Neutralizing Agent: NOT APPLICABLE.

Waste Disposal Method: DISPOSAL SHOULD BE MADE IN ACCORDANCE WITH ALL
APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

Precautions-Handling/Storing: STORE IN A COOL, DRY, WELL VENTILATED AREA.
KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. PROTECT CONTAINERS FROM
PHYSICAL DAMAGE.

Other Precautions: READ AND FOLLOW DIRECTIONS ON LABEL. DO NOT REUSE
CONTAINER. DO NOT USE WITH ALUMINUM.

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Control Measures

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Respiratory Protection: IF VENTILATION DOES NOT MAINTAIN INHALATION
EXPOSURES BELOW PEL(TLV), USE NIOSH/MSHA APPROVED ORGANIC VAPOR CARTRIDGE
AND DUST/MIST PRE-FILTER RESPIRATORS AS PER CURRENT 29 CFR 1910.134,
INSTRUCTIONS/WARNINGS AND NIOSH-RESPIRATOR SELECTION.

Ventilation: LOCAL EXHAUST ONLY TO REMAIN BELOW 50% OF TLV.

Protective Gloves: NEOPRENE

Eye Protection: SAFETY GLASSES WITH OPTIONAL FACE SHIELD

Other Protective Equipment: EYE WASH STATION AND SAFETY SHOWER.

INDUSTRIAL-TYPE WORK CLOTHING AND APRON AS REQUIRED.

Work Hygienic Practices: OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND
RECOMMENDED PROCEDURES. DO NOT WEAR CONTAMINATED CLOTHING OR FOOTWEAR.

Suppl. Safety & Health Data: AVOID PROLONGED OR REPEATED EXPOSURE. DO NOT
GET ON SKIN OR IN EYES. DO NOT BREATHE VAPORS OR MISTS.

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Transportation Data

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Disposal Data

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Label Data

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Label Required: YES

Technical Review Date: 14JAN91

Label Status: F

Common Name: DEGLAZING SOLV. #S 83-0-105532, 83-9-105533

Chronic Hazard: YES

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Moderate: X

Fire Hazard-None: X

Reactivity Hazard-None: X

Special Hazard Precautions: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. EXPOSURE IN AN ENCLOSED AREA MAY BE VERY HARMFUL. CONTACT MAY IRRITATE OR BURN SKIN AND EYES. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION. EYE IRRITANT, MILDLY IRRITATING TO SKIN, WILL DEFAT SKIN. SLIGHTLY TOXIC, ANASTHETIC EFFECTS MAY OCCUR IN RANGES OF 1000 PPM IF INHALED. NOT SIGNIFICANTLY TOXIC IF INGESTED.

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: MULTIGRAPHICS DIVISION; AM INTERNATIONAL, INC.

Label Street: 1800 WEST CENTRAL ROAD

Label City: MT.PROSPECT

Label State: IL

Label Zip Code: 60056-2293

Label Country: US

Label Emergency Number: 312-870-5121 (DAY) 398-1900 (NIGHT)

=====

URL for this msds <http://siri.org>. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 5809

PRODUCT: ELECTROSTATIC SOLUTION

PART NUMBER: 83-1-104054

FORMULA:

KEYWORD: HFR=220

PORTS NUMBER: 66-020-2270; 66-001-0135

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=210

MANUFACTURER:
AM MULTIGRAPHICS
1800 WEST CENTRAL ROAD
MT. PROSPECT
IL

60056

PHONE: PHONE:

EMERGENCY PHONE: 708-870-5121

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 212 F
Melting Point. . . . NA
Freezing Point. . . . NG
Pour Point. . . . NG
Softening Point. . . NG

NOTE: NOT APPLICABLE.

Specific Gravity . . EQ 1.08
Vapor Pressure . . . EQ 15
Vapor Density. . . . NE
Percent Volatiles. . NG
Evaporation Rate . . LT 1
pH EQ 4.5
Molecular Weight . . NG
Viscosity. NG
Solubility in Water. COMPLETE.

NOTE: MMHG @ 25'C.

NOTE: NOT ESTABLISHED.

NOTE: WATER=1, SLOWER.

Odor/Appearance/Other Characteristics:
YELLOW GREEN LIQUID, SLIGHT ALMOND ODOR.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NO
Flash Point, Open Cup . . . NO
Fire Point. NG
Auto Ignition. NG
Explosive/Flammable Limits
Lower (LEL). NA
Upper (UEL). NA

NOTE: NONE.

NOTE: NONE.

NOTE: NOT APPLICABLE.

NOTE: NOT APPLICABLE.

Shipping Regulations

UN/NA Number. NE
D.O.T. Hazard Class. . . NOT ESTABLISHED
Label NONE REQUIRED
Proper Shipping Name . . NOT APPLICABLE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/01/95

===== Component Information =====

POTASSIUM HEXACYANOFERRATE

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 2 5
C.A.S. No.: 13943583

Note:

FOR ALL COMPONENTS: NE: NOT ESTABLISHED.

MONOAMMONIUM PHOSPHATE

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 8 10
C.A.S. No.: 7722761

GLYCERINE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 10
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 10
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 12 14
C.A.S. No.: 56815

Note:

PEL & TLV: AS MIST ONLY.

GUM ARABIC

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 1 2
C.A.S. No.: 9000015

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NE
STEL (MG/M3):
Product #: BT 74 79
C.A.S. No.: 7732185

===== I. PRODUCT IDENTIFICATION =====

TRADE NAME: Electrostatic Solution

NAME/SYNONYM: Conversion Solution

PART NUMBERS:

83-1-104054 1 gal.
83-0-104055 5 gal.
200-1050-50A 50 gal.

DATE: March 1, 1995 (Revised)

MSDS CODE NO.: 095

EMERGENCY PHONE:

DAY: (708) 870-5121
NIGHT: (708)-398-1900

MANUFACTURED/DISTRIBUTED BY:

AM MULTIGRAPHICS
1800 WEST CENTRAL ROAD
MT. PROSPECT, ILLINOIS 60056

===== II. INGREDIENTS =====

II. INGREDIENTS - CONFIDENTIAL INFORMATION FOR SAFETY/HEALTH USE ONLY
SEE COMPONENT INFORMATION.

(ALL EXPOSURE LIMITS ARE PPM UNLESS OTHERWISE NOTED)

CHEMICAL NAME	OSHA ACGIH, NIOSH NTP, IARC PEL TLV, EXPOSURE OSHA LIMITS		
	TWA	STEL	CARCINOGEN

* Potassium hexacyanoferrate			No
* Momoammonium phosphate			No
* glycerine			No
* gum arabic			No
* water			No

* Non-hazardous as defined by 29 CFR 1910.1200.

** As mist only.

===== III. PHYSICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== IV. FIRE AND EXPLOSION HAZARD =====

FLASH POINT (METHOD): None

FLAMMABLE LIMITS:

LEL: N/A
UEL: N/A

EXTINGUISHING MEDIA: Compatible with all extinguishing media.

SPECIAL FIRE FIGHTING PROCEDURE: None

UNUSUAL FIRE/EXPLOSION HAZARDS: Catastrophic accidents, involving large quantities of product and accompanied by fire or contact with large quantities of strong acid, response personnel will be required to wear NIOSH/MSHA approved self-contained breathing apparatus due to, and dependent upon, the quantities of cyanide.

===== V. REACTIVITY DATA =====

STABILITY: Stable under normal conditions of use

CONDITIONS TO AVOID: Strong light & heat

INCOMPATIBILITY, MATERIALS TO AVOID: Chlorine bleach, strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Product will slowly decompose with formation of hydrocyanic acid, complex cyanoferrates and cyanides.

HAZARDOUS POLYMERIZATION: Will not occur.

===== VI. SPILL OR LEAK PROCEDURE/WASTE DISPOSAL =====

Flush with water to drain.

DISPOSAL: Small quantities such as employed in normal use may be flushed with water to drain. Do not mix with acid wastes. Larger quantities should not be dumped into waterways, check Federal, State and Local regulations regarding disposal of hexacyanoferrate salts (Generally 2 ppm maximum in streams and lakes).

===== VII. HEALTH HAZARD DATA =====

ROUTES OF ENTRY, SIGNS AND SYMPTOMS OF OVEREXPOSURE, ACUTE AND CHRONIC EFFECTS:

EYE: May cause eye irritation.

SKIN: Prolonged contact may cause skin irritation.

INHALATION: Not a normal route of entry.

INGESTION: Large doses may cause gastro-intestinal irritation.

TARGET ORGANS: None known

CARCINOGENICITY: Not found in NTP, IARC or OSHA.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY NORMAL EXPOSURE: None.
Hexacyanoferrate salts are considered slightly toxic to humans, regardless of whether exposure is acute dermal, acute ingestion or chronic systemic. Any effect on the human body is temporary and reversible and the effect disappears following termination of exposure.

EMERGENCY AND FIRST AID:

EYE: Flush with water for 15 minutes. Get medical aid.

SKIN: Wash with soap and water

INHALATION: Not a normal route of entry.

INGESTION: Induce vomiting, get medical aid.

===== VIII. SPECIAL PROTECTION INFORMATION =====

RESPIRATION PROTECTION: N/A

VENTILATION: Normal air conditioning

PROTECTIVE GLOVES: Not required

EYE PROTECTION: Optional

OTHER PROTECTION: N/A

===== IX. SPECIAL PRECAUTIONS =====

NDLING AND STORAGE: Store in a cool, dark place, away from strong acids and fire hazards. Wash thoroughly after handling.

OTHER: Read label precautions. Do not reuse container. For Commercial use only. Keep from reach of children.

===== X. ENVIRONMENTAL DATA =====

HAZARDOUS SUBSTANCE (40 CFR 372: SARA SEC. 313): None

REPORTABLE QUANTITY (40 CFR 355: SARA SEC. 302) None

HAZARDOUS SUBSTANCE (40 CFR 302: CERCLA TABLE 302.4): None.

RCRA WASTE NUMBER: None

VOLATILE ORGANIC COMPOUNDS: None

SARA HAZARD CLASS:

ACUTE: No
CHRONIC: No
FIRE: No
PRESSURE: No
REACTIVITY: No

NFPA HAZARD RATING:

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0
SPECIFIC HAZARD: N/A

===== XI. DOT SHIPPING INFORMATION =====

SURFACE: Non-hazardous

AIR: Non-hazardous

PROPER SHIPPING NAME: N/A

UN: N/E
CLASS: N/E
LABELS: None required

NOTE: The chemicals in this product are listed on the TSCA inventory.

===== XII. DISCLAIMER =====

The information contained in this Material Safety Data Sheet is furnished without warranty of any kind. AM Multigraphics believes that the information contained herein is current as of the revision date of this MSDS. Since the conditions of use of this product are beyond the control of AM Multigraphics, it is the obligation of the user to determine the conditions for safe use.

N/A = Not Applicable
N/E = Not Established

POLYSCIENCE -- ~~ENDRIN~~, 510C-4
 MATERIAL SAFETY DATA SHEET
 NSN: 681000N047396
 Manufacturer's CAGE: 58378
 Part No. Indicator: A
 Part Number/Trade Name: ENDRIN, 510C-4

General Information

Company's Name: POLYSCIENCE
 Company's Street: 7800 MERRIMAC AVE
 Company's City: NILES
 Company's State: IL
 Company's Country: US
 Company's Zip Code: 60648
 Company's Emerg Ph #: 321-965-0611
 Company's Info Ph #: 321-965-0611
 Record No. For Safety Entry: 001
 Tot Safety Entries This Stk#: 001
 Status: SMJ
 Date MSDS Prepared: 01MAR92
 Safety Data Review Date: 14NOV95
 MSDS Serial Number: BSTJG
 Hazard Characteristic Code: T2

Ingredients/Identity Information

Proprietary: NO
 Ingredient: 1,4:5,8-DIMETHANONAPHTHALENE, 1,2,3,4,10,10-HEXACHLORO-6, 7-EPOXY-1, 4,4A,5,6,7,8,8A- OCTAHYDRO-, ENDO, ENDO-; (ING 2)
 Ingredient Sequence Number: 01
 NIOSH (RTECS) Number: IO1575000
 CAS Number: 72-20-8
 OSHA PEL: N/K (FP N)
 ACGIH TLV: N/K (FP N)

Proprietary: NO
 Ingredient: ING 1: (ENDRIN) (MFR CAS # 105208-85-3)
 Ingredient Sequence Number: 02
 NIOSH (RTECS) Number: 9999999ZZ
 OSHA PEL: NOT APPLICABLE
 ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: NONE SPECIFIED BY MANUFACTURER.

CAS # 72-20-8
 MSDS Serial BSTJG
 Endrin

=====

Fire and Explosion Hazard Data

=====

Extinguishing Media: USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.

Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire And Expl Hazrds: EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

=====

Reactivity Data

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Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: STRONG OXIDIZING AGENTS, ACIDS.

Hazardous Decomp Products: TOXIC FUME OF: CARBON MONOXIDE, CARBON DIOXIDE. HYDROGEN CHLORIDE GAS.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT

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Health Hazard Data

=====

LD50-LC50 Mixture: LD50: (ORAL, RAT) 3 MG/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE: MAY BE FATAL IF INHALED, SWALLOWED/ WEAKNESS, NAUSEA, TWITCHING AND TINGLING OF LIMBS, DEAFNESS AND METAL CONFUSION, CONVULSIONS, SOMETIMES ACCOMPANIED BY VIOLENT MUSCULAR CONTRACTIONS AND PERIODS OF UNCON MAY ALSO OCCUR. (EFTS OF OVEREXP)

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT

Signs/Symptoms Of Overexp: HLTH HAZ: CHRONIC: CONTAINS A RADIOACTIVE NERVES, LIVER.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: SKIN: OBTAIN MED ATTN IMMED. INGEST: WASH OUT FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING EYELIDS W/FINGERS. CALL A PHYSICIAN.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: EVAC AREA. WEAR NIOSH/MSHA APPRVD SCBA, RUBB BOOTS & HEAVY RUBB GLOVES. COVER W/AN ACTIVATED CARBON ABSORB, TAKE UP & PLACE IN CLSD CONTRS. TRANSPORT OUTDOORS. VENT AREA & WASH SPILL SITE AFTER MATL PICKUP IS COMPLETE. HNDLE AS A RADIOACTIVE SPILL.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE OF SPILLED MATERIAL AS RADIOACTIVE WASTE.
CONSULT LOCAL, STATE AND FEDERAL REGULATIONS ON DISPOSAL OF RADIOACTIVE
WASTE. OBSERVE ALL FEDERAL, STATE, AND LOCAL LAWS.
Precautions-Handling/Storing: DO NOT BREATHE VAPOR. RADIOACTIVE MATERIAL.
CAN CAUSE DEPRESSION.
Other Precautions: VERY TOXIC BY INHALATION, IN CONTACT W/SKIN AND IF
SWALLOWED. IRRITATING TO EYES, RESP SYS AND SKIN. KEEP AWAY FROM SOURCES OF
IGNITION. NO SMOKING.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED SCBA SHOULD BE WORN.
Ventilation: USE ONLY IN A CHEMICAL FUME HOOD.
Protective Gloves: HEAVY RUBBER GLOVES.
Eye Protection: ANSI APPRVD CHEM WORK GOGGLES (SUPP)
Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: EYE PROT: WITH FULL LENGTH FACESHIELD (FP N).

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 19JAN94
Label Date: 19JAN94
Label Status: G
Common Name: ENDRIN, 510C-4
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Severe: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: RADIOACTIVE MATERIAL. KEEP FROM IGNITION
SOURCES. ACUTE: MAY BE FATAL IF INHALED, SWALLOWED OR ABSORBED THRU SKIN.
EXPOSURE CAN CAUSE: WEAKNESS, NAUSEA, TWITCHING AND TINGLING OF LIMBS,
DEAFNESS AND MENTAL CONFUSION, CONVULSIONS, SOMETIMES ACCOMPANIED BY
VIOLENT MUSCULAR CONTRACTIONS AND PERIODS OF UNCONSCIOUSNESS MAY ALSO
OCCUR. CHRONIC: CONTAINS A RADIOACTIVE ISOTOPE WHICH MAY PRODUCE CANCER AND
GENETIC MUTATION. TARGET ORGANS: NERVES, LIVER.

Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: POLYSCIENCE
Label Street: 7800 MERRIMAC AVE
Label City: NILES
Label State: IL
Label Zip Code: 60648
Label Country: US
Label Emergency Number: 321-965-0611

=====

URL for this msds <http://siri.org>. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.

LOGOS SCIENTIFIC -- ~~ETHANOL~~ - ETHANOL, REAGENT
 MATERIAL SAFETY DATA SHEET
 NSN: 6810013155340
 Manufacturer's CAGE: 4J986
 Part No. Indicator: A
 Part Number/Trade Name: ETHANOL

=====

General Information

=====

Item Name: ETHANOL, REAGENT
 Company's Name: LOGOS SCIENTIFIC INC
 Company's Street: 700 SUNSET RD
 Company's City: HENDERSON
 Company's State: NV
 Company's Country: US
 Company's Zip Code: 89015-2602
 Company's Emerg Ph #: 702-565-1383
 Company's Info Ph #: 702-565-1383
 Record No. For Safety Entry: 001
 Tot Safety Entries This Stk#: 003
 Status: SE
 Date MSDS Prepared: 06NOV90
 Safety Data Review Date: 20JUL92
 Supply Item Manager: CX
 MSDS Serial Number: BNKTC
 Specification Number: NOT APPLICABLE
 Hazard Characteristic Code: F3
 Unit Of Issue: BT
 Unit Of Issue Container Qty: 32 FL OZ
 Type Of Container: BOTTLE
 Net Unit Weight: 1.6 LBS
 NRC/State License Number: NOT APPLICABLE

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Ingredients/Identity Information

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Proprietary: NO
 Ingredient: ETHYL ALCOHOL (ETHANOL)
 Ingredient Sequence Number: 01
 Percent: 70-98
 NIOSH (RTECS) Number: KQ6300000
 CAS Number: 64-17-5
 OSHA PEL: 1000 PPM
 ACGIH TLV: 1000 PPM; 9192
 Other Recommended Limit: NONE SPECIFIED

=====

Physical/Chemical Characteristics

CAS# 64-17-5
 MSDS BNKTC
 Ethanol

=====

Appearance And Odor: CLEAR LIQUID WITH ALCOHOL ODOR.

Boiling Point: 175F,79C

Vapor Pressure (MM Hg/70 F): 40 MM HG

Vapor Density (Air=1): 1.59

Specific Gravity: 0.79

Evaporation Rate And Ref: >1 (ETHER=1)

Solubility In Water: 100%

pH: N/A

=====

Fire and Explosion Hazard Data

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Flash Point: 55.6F,13.1C

Flash Point Method: TCC

Lower Explosive Limit: 3.3

Upper Explosive Limit: 19

Extinguishing Media: WATER SPRAY ONLY, DRY CHEMICAL, CARBON DIOXIDE,
ALCOHOL FOAM.

Special Fire Fighting Proc: DO NOT USE DIRECT WATER STREAM. WEAR SELF-
CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

Unusual Fire And Expl Hazrds: BURNS WITH AN INVISIBLE FLAME IN DAYLIGHT.

EXTINGUISH ALL NEARBY SOURCES OF IGNITION BECAUSE VAPORS MAY BE MOVED BY
AIR CURRENTS.

=====

Reactivity Data

=====

Stability: YES

Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS AND OPEN FLAMES.

Materials To Avoid: STRONG OXIDIZERS, CHROMIC ANHYDRIDE, LEAD PERCHLORATE,
PERCHLORIC ACID.

Hazardous Decomp Products: NONE SPECIFIED BY MANUFACTURER.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT APPLICABLE

=====

Health Hazard Data

=====

LD50-LC50 Mixture: UNKNOWN

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: SKIN AND EYE IRRITATION. MAY BE FATAL OR
CAUSE BLINDNESS.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT APPLICABLE

Signs/Symptoms Of Overexp: HEADACHE, NAUSEA.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: EYES- IRRIGATE IMMEDIATELY WITH WATER FOR 15 MINUTES. CALL PHYSICIAN. SKIN- FLUSH WITH WATER IMMEDIATELY. INHALATION- MOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NEEDED. CALL PHYSICIAN. INGESTION- INDUCE VOMITING. CALL PHYSICIAN.

=====

Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: ABSORB ON PAPER AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FLUSH AREA WITH WATER. LARGE SPILLS SHOULD BE DIKED WITH SOIL OR NON-COMBUSTIBLE ABSORBENT MATERIAL.

Neutralizing Agent: NONE

Waste Disposal Method: ALL LIQUID OR CONTAMINATED ABSORBENT SHOULD BE DISPOSED OF IN DOT-APPROVED WASTE CONTAINERS. COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS FOR DISPOSAL OF THIS MATERIAL.

Precautions-Handling/Storing: KEEP AWAY FROM HEAT, SPARKS, FLAMES. STORE IN COOL, DRY, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINERS FREQUENTLY.

Other Precautions: DO NOT GET IN EYES, ON SKIN OR CLOTHING. WASH THOROUGHLY AFTER USE.

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Control Measures

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Respiratory Protection: NONE NORMALLY REQUIRED.

Ventilation: MECHANICAL EXHAUST.

Protective Gloves: CHEMICAL RESISTANT.

Eye Protection: CHEMICAL GOGGLES OR FULL FACE SHIELD.

Other Protective Equipment: LAB COAT.

Work Hygienic Practices: WASH HANDS THOROUGHLY AFTER HANDLING THIS MATERIAL.

Suppl. Safety & Health Data: NONE

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Transportation Data

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Trans Data Review Date: 92202

DOT PSN Code: FTN

DOT Proper Shipping Name: ETHANOL OR ETHYL ALCOHOL OR ETHANOL SOLUTIONS OR ETHYL ALCOHOL SOLUTIONS

DOT Class: 3

DOT ID Number: UN1170

DOT Pack Group: II

DOT Label: FLAMMABLE LIQUID

IMO PSN Code: GPL

IMO Proper Shipping Name: ETHYL ALCOHOL

IMO Regulations Page Number: 3219 *

IMO UN Number: 1170
 IMO UN Class: 3.2
 IMO Subsidiary Risk Label: -
 IATA PSN Code: KXQ
 IATA UN ID Number: 1170
 IATA Proper Shipping Name: ETHANOL
 IATA UN Class: 3
 IATA Label: FLAMMABLE LIQUID
 AFI PSN Code: KXQ
 AFI Prop. Shipping Name: ETHANOL OR ETHANOL SOLUTIONS
 AFI Class: 3
 AFI ID Number: UN1170
 AFI Pack Group: II
 AFI Label: FLAMMABLE LIQUID
 AFI Basic Pac Ref: 7-7

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Disposal Data

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Label Data

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Label Required: YES
 Technical Review Date: 20JUL92
 Label Date: 20JUL92
 Label Status: F
 Common Name: ETHANOL
 Chronic Hazard: NO
 Signal Word: DANGER!
 Acute Health Hazard-Moderate: X
 Contact Hazard-Slight: X
 Fire Hazard-Severe: X
 Reactivity Hazard-None: X
 Special Hazard Precautions: SKIN AND EYE IRRITATION. MAY BE FATAL OR CAUSE
 BLINDNESS. KEEP AWAY FROM HEAT, SPARKS, FLAMES. STORE IN COOL, DRY, WELL-
 VENTILATED AREA AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINERS
 FREQUENTLY. FIRST AID: EYES- IRRIGATE IMMEDIATELY WITH WATER FOR 15
 MINUTES. CALL PHYSICIAN. SKIN- FLUSH WITH WATER IMMEDIATELY. INHALATION-
 MOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NEEDED. CALL PHYSICIAN.
 INGESTION- INDUCE VOMITING. CALL PHYSICIAN.
 Protect Eye: Y
 Protect Skin: Y
 Protect Respiratory: Y
 Label Name: LOGOS SCIENTIFIC INC
 Label Street: 700 SUNSET RD
 Label City: HENDERSON
 Label State: NV

Label Zip Code: 89015-2602

Label Country: US

Label Emergency Number: 702-565-1383

=====

URL for this msds <http://siri.org>. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 5996

PRODUCT: ETHYL ETHER

PART NUMBER:

FORMULA: C4-H10-O

KEYWORD: ORGANIC

PORTS NUMBER: 66-005-4025; 66-001-6129; 66-005-4023

PORTS MISC INFO:
LAB MSDS# 162

PORTS RATING: HFR=244

MANUFACTURER:
FISHER SCIENTIFIC CO.
1 REAGENT LANE, P.O. BOX 375
FAIR LAWN
NJ07410
PHONE: PHONE: 201-796-7100
EMERGENCY PHONE: 201-796-7100

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 95 F	NOTE: 35'C.
Melting Point. . . .	EQ -190 F	NOTE: -123'C.
Freezing Point. . . .	NG	
Pour Point.	NG	
Softening Point. . . .	NG	

Specific Gravity . . .	EQ .7	
Vapor Pressure	EQ 442	NOTE: MMHG @ 20'C.
Vapor Density.	EQ 2.6	
Percent Volatiles. . .	NG	
Evaporation Rate . . .	EQ 37.5	NOTE: BUAC=1.
pH	NG	
Molecular Weight . . .	EQ 74.12	
Viscosity.	NG	
Solubility in Water. .	6.9%.	

Odor/Appearance/Other Characteristics:

COLORLESS,VOLATILE,MOBILE LIQUID W/ AN ETHEREAL ODOR & A BURNING SWEET TASTE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	EQ -49 F	NOTE: -45'C.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	EQ 356 F	NOTE: 180'C.
Explosive/Flammable Limits		
Lower (LEL).	EQ 1.9	
Upper (UEL).	EQ 48	

Shipping Regulations

UN/NA Number. UN1155
D.O.T. Hazard Class. . . 3-FLAMMABLE LIQUID
Label FLAMMABLE LIQUID
Proper Shipping Name . . DIETHYL ETHER

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 7/06/95

===== Component Information =====

ETHYL ETHER

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1210
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1210
STEL (PPM):
STEL (MG/M3): 1520
Product #: EQ 100
C.A.S. No.: 60297

Note:

PEL & TLV: 400 PPM / OSHA & ACGIH STEL: 500 PPM.

===== SUBSTANCE IDENTIFICATION =====

SUBSTANCE: ETHYL ETHER

CAS NUMBER: 60-29-7

TRADE NAMES/SYNONYMS: DIETHYL ETHER; ETHOXYETHANE; ETHER; ETHYL OXIDE;
DIETHYL OXIDE; SURFURIC ETHER; RCRA U117; UN 1155; STCC 4908157; C4H10O;
ACC08980

CHEMICAL FAMILY: ETHER, ALIPHATIC

MOLECULAR FORMULA: C4-H10-O

MOLECULAR WEIGHT: 74.12

AT NO: E1984

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=3 REACTIVITY=1 PERSISTENCE=1

NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=4 REACTIVITY=1

DATE: 09/13/95

EMERGENCY NUMBER: (201) 796-7100

CHEMTREC ASSISTANCE: (800) 424-9300

TELEPHONE: (201) 796-7100

MANUFACTURER'S NAME AND ADDRESS:

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410

===== COMPONENTS AND CONTAMINANTS =====

SEE COMPONENT INFORMATION.

COMPONENT: ETHYL ETHER

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ETHYL ETHER:

400 PPM (1210 MG/M3) DFG MAK TWA;
800 PPM (2420 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; ETHYL ACETATE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH III # 1610).

100 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY

OSHA REVOKED THE FINAL RULE LIMITS OF JANUARY 19, 1989 IN RESPONSE TO THE 11TH CIRCUIT COURT OF APPEALS DECISION (AFL-CIO v. OSHA) EFFECTIVE JUNE 30, 1993. SEE 29 CFR 1910.1000 (58 FR 35338)

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD: 0.33 PPM

SOLVENT SOLUBILITY: ALCOHOL, ACETONE, BENZENE, CHLOROFORM, SOLVENT NAPHTHA

===== FIRE AND EXPLOSION DATA =====

FIRE AND EXPLOSION HAZARD: DANGEROUS FIRE AND EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME. MAY ACCUMULATE STATIC ELECTRIC CHARGES THAT RESULT IN IGNITION OF ITS VAPORS. VAPOR-AIR MIXTURES ARE EXPLOSIVE. MAY FORM EXPLOSIVE PEROXIDES IF EXPOSED TO AIR OR LIGHT FOR LONG PERIODS OF TIME. VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASHBACK.

FLASH POINT: -49 F (-45 C) (CC)

UPPER EXPLOSIVE LIMIT: 48%

LOWER EXPLOSIVE LIMIT: 1.9%

AUTOIGNITION TEMP.: 356 F (180 C)

FLAMMABILITY CLASS (OSHA): IA

FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

ALCOHOL FOAM: (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING: MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING QUANTITIES AS A FOG, SOLID STREAMS MAY SPREAD FIRE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS KEEP UPWIND. EVACUATE TO A RADIUS OF 1500 FEET FOR UNCONTROLLABLE FIRES. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

===== TRANSPORTATION DATA =====

S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
ETHYL ETHER-UN 1155

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101: PG I

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND
SUBPART E: FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:

EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.201
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:

PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

===== TOXICITY =====

ETHYL ETHER:

IRRITATION DATA: 360 MG OPEN SKIN-RABBIT MILD; 50 MG/24 HOURS SKIN-GUINEA
PIG SEVERE; 100 PPM EYE-HUMAN; 100 MG EYE-RABBIT MODERATE

TOXICITY DATA: 200 PPM INHALATION-HUMAN TCLO; 73,000 PPM/2 HOURS
INHALATION-RAT LC50; 106,000 PPM INHALATION-RABBIT LCL0; 6500 PPM/99 MINUTES
INHALATION-MOUSE LC50; 76,000 PPM INHALATION-DOG LCL0; 260 MG/KG ORAL-MAN
LD0; 1215 MG/KG ORAL-RAT LD50; 8 MG/KG SUBCUTANEOUS-MOUSE LDLO; 996 MG/KG
INTRAVENOUS-MOUSE LD50; 2420 MG/KG INTRAPERITONEAL-MOUSE LD50; 2000 MG/KG
INTRAPERITONEAL-GUINEA PIG LDLO; MUTAGENIC DATA (RTECS).

CARCINOGEN STATUS: HUMAN INADEQUATE EVIDENCE (IARC GROUP-3).

LOCAL EFFECTS: IRRITANT - INHALATION, SKIN, EYE.

ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION; RELATIVELY NON-TOXIC
BY INHALATION.

TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH A HISTORY OF CHRONIC SKIN OR
RESPIRATORY DISEASE.

ADDITIONAL DATA: ALCOHOLIC BEVERAGES ENHANCE THE TOXIC EFFECT.

===== HEALTH EFFECTS AND FIRST AID =====

INHALATION:

ETHYL ETHER: IRRITANT/NARCOTIC. 1900 PPM IMMEDIATELY DANGEROUS TO LIFE OR
HEALTH.

ACUTE EXPOSURE: INHALATION OF VAPORS MAY CAUSE IRRITATION TO THE
RESPIRATORY TRACT. HUMAN ODOR DETECTION MAY BEGIN AT 0.7 PPM. NASAL
IRRITATION MAY OCCUR AT 200 PPM. HIGHER CONCENTRATIONS MAY BEGIN TO PRODUCE
CENTRAL NERVOUS SYSTEM DEPRESSION WITH DROWSINESS, DIZZINESS, NAUSEA,
HEADACHE, STUPOR, AND UNCONSCIOUSNESS. HOWEVER, CONCENTRATIONS OF 7000 PPM
HAVE BEEN TOLERATED BY SOME WORKERS WITHOUT UNDESIRABLE EFFECTS. INITIAL
SYMPTOMS MAY INCLUDE VOMITING, PALLOR, EXCITEMENT TO DROWSINESS, LOWERING OF
THE PULSE AND BODY TEMPERATURE, IRREGULAR RESPIRATION, MUSCULAR RELAXATION,
AND EXCESSIVE SALIVATION. TEMPORARY AFTER EFFECTS OF EXPOSURE MAY INCLUDE

VOMITING, SALIVATION, IRRITATION OF RESPIRATORY PASSAGES, HEADACHES, AND DEPRESSION OR EXCITATION. ALBUMIN MAY APPEAR IN THE URINE AND POLYCYTHEMIA IN THE BLOOD. 19,000 PPM IS CONSIDERED THE LOWEST ANESTHESIA-PRODUCING DOSE. THEREFORE, THERE IS A LARGE MARGIN OF SAFETY BETWEEN THE CONCENTRATIONS CAUSING NASAL IRRITATION AND THOSE CAUSING ANESTHESIA, PERMANENT DAMAGE OR DEATH. DEATH HAS BEEN REPORTED FROM RESPIRATORY PARALYSIS.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE MAY CAUSE ANOREXIA, EXHAUSTION, HEADACHE, DROWSINESS, DIZZINESS, EXCITATION, AND PSYCHIC DISTURBANCES. DAMAGE TO THE LIVER AND KIDNEY MAY OCCUR. TOLERANCE MAY BE ACQUIRED THROUGH REPEATED EXPOSURES.

FIRST AID: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. PERFORM ARTIFICIAL RESPIRATION IF NECESSARY. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

ETHYL ETHER: IRRITANT.

ACUTE EXPOSURE: CONTACT WITH THE SKIN MAY CAUSE IRRITATION BY DEFATTING AND DRYING OF THE SKIN. ABSORPTION THROUGH HUMAN SKIN IS NOT GREAT ENOUGH TO CAUSE A DELETERIOUS EFFECT.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE MAY CAUSE DERMATITIS WITH CRACKING AND DRYING OF THE SKIN DUE TO THE EXTRACTION OF OILS.

FIRST AID: REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

ETHYL ETHER: IRRITANT.

ACUTE EXPOSURE: VAPORS MAY CAUSE IRRITATION. THE UNDILUTED LIQUID MAY CAUSE PAINFUL INFLAMMATION OF A TRANSITORY NATURE. AN EXAMINATION OF A HUMAN EYE AFTER A GENEROUS SPLASH SHOWED DULLING OF THE CORNEA.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE MAY CAUSE CONJUNCTIVITIS.

FIRST AID: WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

ETHYL ETHER: NARCOTIC.

ACUTE EXPOSURE: INGESTION MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH NAUSEA, VOMITING, DROWSINESS, AND DIZZINESS. THE FATAL AMOUNT IS ESTIMATED AT 1 OR 2 OUNCES. SYMPTOMS MAY BE SIMILAR TO ETHANOL INTOXICATION EXCEPT THAT ONSET IS MORE RAPID AND DURATION IS SHORTER. BECAUSE OF ITS VOLATILITY, THE STOMACH MAY BECOME PROMPTLY DISTENDED WHICH MAY HINDER BREATHING.

CHRONIC EXPOSURE: REPEATED DRINKING OF ETHER HAS BEEN REPORTED RESULTING IN THE DEVELOPMENT OF THE "ETHER HABIT" AND GENERAL DEBILITY.

FIRST AID: ESTABLISH AIRWAY AND MAINTAIN RESPIRATION. REMOVE VOLATILE ANESTHETICS BY FORCED VENTILATION. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) GET MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE: NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

===== REACTIVITY =====

REACTIVITY:

ETHYL ETHER: IN THE PRESENCE OF OXYGEN, OR ON LONG STANDING, OR WHEN CONTAINED IN BOTTLES AND EXPOSED TO SUNLIGHT, UNSTABLE PEROXIDES SOMETIMES FORM WHICH MAY EXPLODE SPONTANEOUSLY OR WHEN HEATED.

INCOMPATIBILITIES:

ETHYL ETHER:

ACETYL PEROXIDE: POSSIBLE VIOLENT EXPLOSION.
BORON TRIAZIDE: POSSIBLE EXPLOSION.
BROMINE: VIOLENT REACTION.
BROMINE AZIDE: FORMATION OF EXPLOSIVE SOLUTION.
BROMINE PENTAFLUORIDE: FIRE AND EXPLOSION HAZARD.
BROMINE TRIFLUORIDE: EXPLOSION.
CHLORINE: POSSIBLE IGNITION OR EXPLOSION.
CHLORINE TRIFLUORIDE: VIOLENT, POSSIBLE EXPLOSIVE REACTION.
CHROMIC ANHYDRIDE: VIOLENT REACTION.
CHROMYL CHLORIDE: IGNITION.
HALOGENS: FIRE AND EXPLOSION HAZARD.
HYDROGEN PEROXIDE: VIOLENT DETONATION.
INTERHALOGENS: FIRE AND EXPLOSION HAZARD.
IODINE HEPTAFLUORIDE: IGNITION.
IODINE (VII) OXIDE: MAY DECOMPOSE EXPLOSIVELY.
LITHIUM ALUMINUM HYDRIDE: EXPLOSION HAZARD.
NITRIC ACID: EXPLOSION HAZARD.
NITROSYL PERCHLORATE: EVOLVES GAS THEN EXPLODES.
NITRYL HYPOFLUORITE (FLUORINE NITRATE): EXPLOSION HAZARD.
NITRYL PERCHLORATE: EXPLOSION HAZARD.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
OXYGEN (LIQUID): EXPLOSION HAZARD.
OZONE: EXPLOSION HAZARD.
PEAT SOILS: EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSION HAZARD.
PERMANGANIC ACID: EXPLOSION HAZARD.
PEROXODISULFURIC ACID: EXPLOSION HAZARD.
POTASSIUM PEROXIDE: SPONTANEOUSLY FLAMMABLE.
SILVER PERCHLORATE: VIOLENT EXPLOSION.
SODIUM PEROXIDE: IGNITION.
SULFONYL CHLORIDE: VIGOROUS DECOMPOSITION.
THIOTRITHIAZYL PERCHLORATE: EXPLOSION HAZARD.
TRIETHYLALUMINUM DIETHYL ETHERATE: SPONTANEOUSLY FLAMMABLE.
TRIMETHYLALUMINUM DIETHYL ETHERATE: SPONTANEOUSLY FLAMMABLE.
URANYL NITRATE: POSSIBLE EXPLOSION; SOLUTIONS MAY EXPLODE ON EXPOSURE TO SUNLIGHT.
WOOD PULP EXTRACTS: EXPLOSION HAZARD.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

===== STORAGE AND DISPOSAL =====

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE: PROTECT AGAINST PHYSICAL DAMAGE. DETACHED OUTSIDE STORAGE IS PREFERRED. INSIDE STORAGE SHOULD BE IN A STANDARD FLAMMABLE LIQUIDS STORAGE ROOM OR CABINET. ISOLATE FROM OTHER COMBUSTIBLE MATERIALS. AVOID DIRECT SUNLIGHT. PROTECT AGAINST STATIC ELECTRICITY AND LIGHTNING. FOR LARGE QUANTITY STORAGE ROOMS, PROTECT WITH AUTOMATIC SPRINKLER SYSTEMS AND TOTAL FLOODING CARBON DIOXIDE SYSTEMS. THE REACTIVITY HAZARD MAY BE INCREASED TO 3 ON LONG STANDING DUE TO PEROXIDE FORMATION. SEPARATE FROM OXIDIZING MATERIALS (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL: DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40CFR 262. EPA HAZARDOUS WASTE NUMBER U117.

CONDITIONS TO AVOID: AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNECESSARY PERSONNEL IN AREA. DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A CONSIDERABLE DISTANCE IN HEAT OF FIRE.

ETHERS WHICH CONTAIN PEROXIDES MAY EXPLODE WHEN THE CAPS OR STOPPERS OF THEIR CONTAINERS ARE REMOVED.

===== SPILL AND LEAK PROCEDURES =====

OCCUPATIONAL SPILL: SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN HAZARD AREA. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. WATER SPRAY MAY REDUCE VAPOR; BUT IT MAY NOT PREVENT IGNITION IN CLOSED SPACES. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER NONCOMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY. STAY UPWIND; KEEP OUT OF LOW AREAS.

REPORTABLE QUANTITY (RQ): 100 POUNDS

THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

===== PROTECTIVE EQUIPMENT =====

VENTILATION: PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR: THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ETHYL ETHER:

1900 PPM: ANY CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

ANY AIR-PURIFYING, FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.

ANY POWERED, AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

ANY SUPPLIED-AIR RESPIRATOR.

ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.

ESCAPE: ANY AIR-PURIFYING, FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT-OR BACK-MOUNTED ORGANIC VAPOR CANISTER. ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH

CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AND EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

===== SPECIAL NOTES =====

AUTHORIZED - FISHER SCIENTIFIC, INC.

CREATION DATE: 09/28/84

REVISION DATE: 07/06/95

ADDITIONAL INFORMATION:

THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

PORTS MSDS #: 5488

PRODUCT: FREON 113 REFRIGERANT

PART NUMBER:

FORMULA: CCl₂FCClF₂

KEYWORD: FREON

PORTS NUMBER: 03-983-3200

PORTS MISC INFO:

95-19-6720

PORTS RATING: HFR=101

MANUFACTURER:

E.I. DUPONT DE NEMOURS & CO., INC.

1007 MARKET STREET

WILMINGTON

DE

19898

PHONE: 800-962-9919

EMERGENCY PHONE: 800-441-3637

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 118 F

NOTE: 48'C.

Melting Point. . . . NG

Freezing Point. . . . NG

Pour Point. . . . NG

Softening Point. . . . NG

Specific Gravity . . EQ 1.57

NOTE: G/CC @ 25'C, LIQUID.

Vapor Pressure . . . EQ 333.98

NOTE: MMHG, 6.46 PSIA.

Vapor Density. . . . EQ 2.9

NOTE: @ 25'C(77'F).

Percent Volatiles. . EQ 100

NOTE: WT%.

Evaporation Rate . . GT 1

NOTE: CC14 = 1.

pH EQ 7

NOTE: NEUTRAL.

Molecular Weight . . EQ 187.38

Viscosity. NG

Solubility in Water. 0.02 WT% @ 25'C(77'F).

Odor/Appearance/Other Characteristics:

CLEAR, COLORLESS LIQUID, SLIGHT ETHEREAL ODOR.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . N*

NOTE: WILL NOT BURN.

Flash Point, Open Cup . . . N*

NOTE: WILL NOT BURN.

Fire Point. NG

Auto Ignition. EQ 572 F

NOTE: 300'C.

Explosive/Flammable Limits

Lower (LEL). NG

Upper (UEL). NG

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: ENVIRONMENTAL ENGINEER, DUPONT ELECTRONICS, 800-441-94

Date Prepared/Revised 9/08/93

===== Component Information =====

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

OSHA PEL (PPM):

OSHA PEL (MG/M3): 7600

ACGIH TLV (PPM): .

ACGIH TLV (MG/M3): 7670

STEL (PPM):

STEL (MG/M3): 9590

Product #: EQ 100

C.A.S. No.: 76131

Note:

ACGIH STEL: 1250 PPM / PEL & TLV: 1000 PPM / AEL: NONE ESTABLISHED.

===== CHEMICAL PRODUCT/COMPANY IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: FREON 113 REFRIGERANT

MATERIAL IDENTIFICATION: "FREON" is a registered trademark of DuPont.

CORPORATE MSDS NUMBER: DU000126

2024FR

REVISED: 8-SEP-1993

PRINTED: 14-DEC-1993

ADENAMES AND SYNONYMS:

TRICHLOROTRIFLUOROETHANE

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

"FREON" TF SOLVENT

"FREON" TF CLEANING AGENT

"FREON" PRECISION CLEANING AGENT

"FREON" TF

"FREON" PCA

"FREON" FT 113

CC0031

CC0292

PHONE NUMBERS:

PRODUCT INFORMATION: 1-800-441-9442

TRANSPORT EMERGENCY: CHEMTREC: 1-800-424-9300

MEDICAL EMERGENCY: 1-800-441-3637

COMPANY IDENTIFICATION:

MANUFACTURER/DISTRIBUTOR'S NAME AND ADDRESS:

DUPONT

1007 MARKET STREET

WILMINGTON, DE 19898

===== COMPOSITION/INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

COMPONENTS/MATERIAL

* 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE ("FREON" 113)

* Regulated as a Toxic Chemical under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

===== HAZARDS IDENTIFICATION =====

POTENTIAL HEALTH EFFECTS:

PRINCIPAL HEALTH HAZARDS (INCLUDING SIGNIFICANT ROUTES, EFFECTS, SYMPTOMS OF OVEREXPOSURE, AND MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE): In acute toxicity testing in animals, "FREON" 113 was of very low toxicity by inhalation. However, life-threatening exposures may occur if handled carelessly. Vapors are heavier than air posing a hazard of asphyxiation if they are trapped in enclosed or low places. At flame temperatures, this fluorocarbon may decompose to hydrogen fluoride which may be lethal at low concentrations. "FREON" 113 poses a hazard of fatal heart irregularities if inhaled at high concentrations. Skin or eye contact may cause irritation. Prolonged skin contact may cause drying of the skin. Inhalation or ingestion may cause dizziness, headache, confusion, incoordination and loss of consciousness.

ANIMAL DATA:

INHALATION 4 HOUR LC50: 52,500 ppm in rats
SKIN ABSORPTION ALD: >11,000 mg/kg in rabbits
ORAL LD50: 43,000 mg/kg in rats

The liquid is a mild skin irritant and a slight eye irritant. The compound has produced a weak allergic skin reaction (sensitization) in guinea pigs.

SKIN: Repeated exposure to high doses of the liquid maintained in close contact with the skin caused severe local irritation in rabbits. This reaction is typically seen when defatting agents are tested under similar conditions.

INHALATION: The effects in animals from high single exposures include anaesthetic effects such as tremors, dizziness, incoordination, and loss of consciousness, and irregular heartbeat (cardiac arrhythmias) due to the heart being made more sensitive to adrenalin (cardiac sensitization). Repeated exposure at high concentrations also produced central nervous system effects during exposure but not evidence of other systemic toxicity.

INGESTION: High, single oral administration of the liquid, at or near lethal doses, produced lethargy within several minutes. Survivors have shown no apparent toxic effects.

There is no evidence of carcinogenicity or teratogenicity in animal testing. In a reproductive toxicity study in rats, no adverse effects on reproductive toxicity study in rats, no adverse effects on reproductive performance were seen at concentrations of 500 ppm, and only minimal effects (slight decrease in corpora lutea) were observed at 12,500 ppm.

This compound does not produce genetic damage in bacterial or mammalian cell cultures. It does not produce heritable genetic damage in male animals (dominant lethal test).

HUMAN HEALTH EFFECTS OF OVEREXPOSURE BY:

SKIN CONTACT MAY INITIALLY INCLUDE: Mild skin irritation, mainly due to rapid evaporation, with possible discomfort or rash. Prolonged skin contact may cause temporary tingling, numbness, coldness, or drying of skin. There are no reports of human skin sensitization. Significant skin permeation, and systemic toxicity, after contact appears unlikely.

EYE CONTACT MAY INITIALLY INCLUDE: Mild eye irritation with discomfort, tearing, or blurring of vision.

The major ingestion hazard is aspiration (liquid entering the lungs during ingestion or vomiting) which may result in "chemical pneumonia". Symptoms include coughing, gasping, choking, shortness of breath, bluish discoloration of the skin, rapid breathing and heart rate, and fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs.

INHALATION OR INGESTION MAY INCLUDE: Temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Higher exposures may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Fatality may occur from gross overexposure. One report cites two cases where workers who were repeatedly overexposed to the compound experienced liver damage; however, it was not proven that the compound actually caused the damage. Another study evaluated 50 workers exposed for an average of over 2 years to 46 - 4700 ppm. No adverse effects were found except for 1 case of dry skin.

CARCINOGENICITY INFORMATION: None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

===== FIRST AID MEASURES =====

FIRST AID:

INHALATION: If high concentrations are inhaled, immediately remove persons to fresh air; keep them calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT: In case of skin contact, flush skin with plenty of water for 5 minutes. Get medical attention if irritation is present.

EYE CONTACT: In case of eye contact, immediately flush eyes with plenty of water for 15 minutes. Call a physician.

INGESTION: If swallowed, no specific intervention is indicated as the compound is not likely to be hazardous by ingestion. Do not induce vomiting. However, consult a physician if necessary.

NOTE TO PHYSICIANS: Activated charcoal slurry may be administered. To prepare activated charcoal slurry suspend 50 g activated charcoal in 400 mL water in plastic bottle and shake well. Administer 5 mL/kg, or 350 mL for an average adult.

Because of a possible increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support.

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. Steroid therapy in mild to moderate cases does not improve outcome. Bacterial pneumonia often occurs after exposure, but prophylactic antibiotics are not indicated and should be reserved for documented bacterial pneumonia.

===== FIRE FIGHTING MEASURES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

FLAMMABLE PROPERTIES:

FLASH POINT: Will not burn

FIRE AND EXPLOSION HAZARDS: Drums may rupture under fire conditions. Decomposition may occur.

EXTINGUISHING MEDIA: As appropriate for combustibles in area.

FIRE FIGHTING INSTRUCTIONS: Use water spray or fog to cool container. Self-contained breathing apparatus (SCBA) is required if drums rupture and contents are spilled under fire conditions.

===== ACCIDENTAL RELEASE MEASURES =====

SAFEGUARDS (PERSONNEL):

NOTE: Review FIRE FIGHTING MEASURES Section and HANDLING (PERSONNEL) in HANDLING AND STORAGE Section before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

ACCIDENTAL RELEASE MEASURES: Ventilate area. Do not flush into sewers. Dike spill. Collect on absorbent material and transfer to steel drums for recovery or disposal. Use self-contained breathing apparatus (SCBA) for large spills. Comply with Federal, State, and local regulations on reporting releases.

===== HANDLING AND STORAGE =====

HANDLING (PERSONNEL): Avoid breathing vapors and prolonged skin exposure. Use with sufficient ventilation to keep employee exposure below recommended limits.

STORAGE: Clean, dry area. Do not heat above 125 deg F.

===== EXPOSURE CONTROLS/PERSONAL PROTECTION =====

ENGINEERING CONTROLS: Normal ventilation for standard use procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be worn as needed to prevent eye contact. Under normal use conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large spill occurs.

EXPOSURE GUIDELINES:

APPLICABLE EXPOSURE LIMITS:

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE:

PEL (OSHA): 1,000 ppm, 7,600 mg/m3, 8 Hr. TWA
TLV (ACGIH): 1,000 ppm, 7,670 mg/m3, 8 Hr. TWA
 STEL 1,250 ppm, 9,590 mg/m3
AEL* DUPONT: None Established

* AEL is Du Pont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

===== PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== STABILITY AND REACTIVITY =====

CHEMICAL STABILITY: Material is stable. However, avoid open flames and high

temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.

POLYMERIZATION: Polymerization will not occur.

OTHER HAZARDS:

DECOMPOSITION: Decomposition products are hazardous. This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

===== ECOLOGICAL INFORMATION =====

ECOTOXICOLOGICAL INFORMATION:

AQUATIC TOXICITY: 96-hour LC50, rainbow trout: 7.4 mg/L

===== DISPOSAL CONSIDERATIONS =====

WASTE DISPOSAL: Comply with Federal, State, and local regulations. Remove to a permitted waste disposal facility.

EPA HAZARDOUS WASTE NOS.: F001 and F002 may apply to waste materials.

===== TRANSPORTATION INFORMATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

SHIPPING INFORMATION:

SHIPPING CONTAINERS: Tank Cars. Tank Trucks. Drums.

NOT REGULATED AS A HAZARDOUS MATERIAL BY DOT OR IMO.

===== REGULATORY INFORMATION =====

U.S. FEDERAL REGULATIONS:

TSCA INVENTORY STATUS: Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312:

ACUTE: Yes
CHRONIC: No
FIRE: No
REACTIVITY: No
PRESSURE: No

LISTS:

EXTREMELY HAZARDOUS SUBSTANCE: No
CERCLA HAZARDOUS SUBSTANCE: No
TOXIC CHEMICALS: Yes

===== OTHER INFORMATION =====

NFPA, NPCA-HMIS:

NPCA-HMIS RATING:

HEALTH: 1
FLAMMABILITY: 0

REACTIVITY: 1

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

RESPONSIBILITY FOR MSDS: Environmental Engineer

ADDRESS:

DUPONT
ELECTRONICS
WILMINGTON, DE 19880-0030

TELEPHONE: 800-441-9442

Indicates updated section.

MATERIAL SAFETY DATA SHEET

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD SYMBOL
BP America (In Ohio): 800-362-8059 (Outside Ohio): 800-321-8642 CHEMTREC Assist: 800-424-9300	216-586-6499	
MSDS Number > AD1		

MANUFACTURER: The Standard Oil Company and its Subsidiaries
 ADDRESS: 200 Public Square, Cleveland, OH 44114-2375

PRODUCT IDENTIFICATION

TRADE NAME: **GASOLINE, REGULAR UNLEADED**

CAS NUMBER: None

SYNONYM(S): MOTOR FUEL; GASOLINE

CHEMICAL FAMILY: Hydrocarbon

MOLECULAR FORMULA: Mixture

MOLECULAR WEIGHT: Mixture

PRODUCT CODE: P 1650

HIERARCHY: 040.040

PRODUCT HAZARD SUMMARY

HEALTH

DANGER!

HARMFUL OR FATAL IF SWALLOWED

ASPIRATION HAZARD

VAPORS MAY BE HARMFUL

LONG-TERM EXPOSURE TO VAPORS HAS CAUSED CANCER IN SOME LABORATORY ANIMALS
 MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

FLAMMABILITY

DANGER!

EXTREMELY FLAMMABLE LIQUID

VAPORS MAY EXPLODE

REACTIVITY

STABLE

PRODUCT HEALTH HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE

INGESTION:

MODERATELY TOXIC. Human LDLo = -10-30 gms. Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects. Effects may

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include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

SKIN:

PRACTICALLY NON-TOXIC. Rabbit dermal LD50 = >5 ml/kg. **SLIGHTLY IRRITATING.** Repeated or prolonged contact may result in defatting, redness, itching, inflammation, cracking and possible secondary infection. High pressure skin injections are **SERIOUS MEDICAL EMERGENCIES.** Injury may not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful (see Notes to Physician section).

EYE:

May cause slight transient irritation.

INHALATION:

May cause respiratory tract irritation. Exposure may cause central nervous system symptoms similar to those listed under "Ingestion" (see Ingestion section). May also cause anemia and irregular heart rhythm. Repeated or prolonged exposures may cause behavioral changes.

SPECIAL TOXIC EFFECTS:

A product of similar composition has been found to be carcinogenic to laboratory animals when given by inhalation. Also, a variety of mutagenicity assays have been conducted that have yielded conflicting results.

NOTE: This product has not been tested as a whole for all potential health effects. It may have other health hazards related to its components. See "Ingredient/Health Hazards" for additional information.

FIRST AID

INGESTION:

DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. Get immediate medical attention. If spontaneous vomiting occurs, monitor for breathing difficulty.

SKIN CONTACT:

Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists. High pressure skin injections are **SERIOUS MEDICAL EMERGENCIES.** Get immediate medical attention.

EYE CONTACT:

Flush immediately with large amounts of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

INHALATION:

Remove affected person from source of exposure. If not breathing, institute cardiopulmonary resuscitation (CPR). If breathing is difficult, give oxygen. Get medical attention.

NOTES TO PHYSICIANS

In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Individuals intoxicated by gasoline should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode,

Individuals should be followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

PERSONAL PROTECTION INFORMATION

SKIN PROTECTION:

Wear impervious gloves and protective clothing to prevent skin contact.

RESPIRATORY PROTECTION:

Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded.

NIOSH/MSHA approved breathing equipment must be available for non-routine and emergency use. Ventilation may be used to control or reduce airborne concentrations.

PHYSICAL PROPERTIES

BOILING POINT: 13.0 C (55 F)

SPECIFIC GRAVITY: 0.72 - 0.74 @ 60 F

MELTING POINT: NA

% VOLATILE: 100.0 @ 437 F

VAPOR PRESSURE: 760.00 MM HG @ 100 F

EVAPORATION RATE (WATER=1): >1

VAPOR DENSITY (AIR=1): 1.2 AS VAPOR

VISCOSITY: ND

% SOLUBILITY IN WATER: NEGLIGIBLE

POUR POINT: ND

pH: ND

APPEARANCE/ODOR: CLEAR LIQUID WITH A STRONG HYDROCARBON ODOR.

FIRE AND EXPLOSION DATA

FLASH POINT: -37.0 C (-35 F) TCC

AUTOIGNITION TEMPERATURE: 444.0 C (833 F)

FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: 1.4

UPPER: 7.6

BASIC FIREFIGHTING PROCEDURES:

Use dry chemical, foam or carbon dioxide to extinguish fire. Water may be ineffective but should be used to cool fire-exposed containers, structures and to protect personnel. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Dangerous when exposed to heat or flame. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources and flash back. Vapors may concentrate in confined areas. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus, with full face mask and full protective equipment.

STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

Combustion may produce CO, CO₂ and reactive hydrocarbons.

SPILL OR RELEASE TO THE ENVIRONMENT:

If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.
- For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department.
- Notify the National Response Center, if required.

Emergency Action:

Keep unnecessary people away. Stay upwind; keep out of low areas. Isolate hazard area and deny entry. (Also see Personal Protection Information section.) Isolate for 1/2 mile in all directions if tank or tankcar is involved in fire.

Spill or Leak Procedure:

No flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Use water spray to reduce vapors. Small Spills: Take up with sand or other noncombustible absorbent material or other sorbent known to be compatible, then flush area with water. Large Spills: Dike far ahead of spill for later disposal.

Notification:

Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

This substance is listed as a toxic pollutant pursuant to 40 CFR 122.21, Appendix D, Table

II/III. Any unusual introduction of this substance into the facility's process streams, stormwater and/or wastewater could result in the violation of U.S. Federal Law. Facilities must notify the USEPA as soon as they know, or have reason to believe, that any activity has occurred, or will occur, which would result in the discharge of a toxic pollutant which is not regulated in the facility's NPDES permit. Notification levels are described in 40 CFR 122.42(a)(1) and 122.42(a)(2). Refer to spill section for additional regulations. There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL HANDLING/STORAGE INFORMATION

HANDLING/STORAGE:

Store in tightly closed containers in cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Ground lines and equipment used during transfer to reduce the possibility of static spark-initiated fire or explosion.

Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld or reuse containers unless adequate precautions are taken against these hazards.

INGREDIENTS/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
Gasoline	None	90-95	300 ppm TWA; 500 ppm STEL (ACGIH)
Gasoline has been shown to cause an increased rate of kidney tumors in laboratory animals.			
Benzene	71-43-2	0-5	1 ppm 8-hour TWA; 5 ppm STEL (OSHA) 1 ppm 60-minute CEIL (NIOSH); 10 ppm (30 mg/M3) TLV (ACGIH 1987-88).

Harmful or fatal if swallowed, inhaled or absorbed through the skin. Dog oral LDLo = 2000 mg/kg. Rat LC50 = 10,000 ppm/7 hours. Aspiration hazard. Moderately irritating to the skin. May cause allergic reactions in some individuals.

Severely irritating to the eye. Acute benzene poisoning causes central nervous system depression. Benzene is carcinogenic to laboratory animals when given by intubation or by inhalation. Chronic exposure affects the hematopoietic system causing blood disorders including anemia and pancytopenia. There is an association between occupational exposure to benzene and human leukemia. This association is based on limited information and is currently unresolved. Mutagenic and clastogenic in mammalian and non-mammalian test systems. Reproductive toxicant only at doses that are maternally toxic, based on tests with animals. Carcinogenic determinations: IARC--Human positive and animal suspected carcinogen; NTP--Known carcinogen; ACGIH--Suspected carcinogen.

Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	NA	Trace	NA
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REVISION DATE: 03-may-1988
REPLACES SHEET DATED: NA

COMPLETED BY: PATNESKY
APPROVED BY: R.W. MAST

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

POLYSCIENCE -- ~~HEPTACHLOR~~, 510C-9
 MATERIAL SAFETY DATA SHEET
 NSN: 681000N047400
 Manufacturer's CAGE: 58378
 Part No. Indicator: A
 Part Number/Trade Name: HEPTACHLOR, 510C-9

=====

General Information

=====

Company's Name: POLYSCIENCE
 Company's Street: 7800 MERRIMAC AVE
 Company's City: NILES
 Company's State: IL
 Company's Country: US
 Company's Zip Code: 60648
 Company's Emerg Ph #: 321-965-0611
 Company's Info Ph #: 321-965-0611
 Record No. For Safety Entry: 001
 Tot Safety Entries This Stk#: 001
 Status: SMJ
 Date MSDS Prepared: 01MAR92
 Safety Data Review Date: 14NOV95
 MSDS Serial Number: BVBVF
 Hazard Characteristic Code: T3

=====

Ingredients/Identity Information

=====

Proprietary: NO
 Ingredient: 4,7-METHANOINDENE, 1,4,5,6,7,8,8-HEPTACHLORO-3A, 4,7,7A-TETRAHYDRO-; (HEPTACHLOR) (SARA III)
 Ingredient Sequence Number: 01
 NIOSH (RTECS) Number: PC0700000
 CAS Number: 76-44-8
 OSHA PEL: 0.5 PPM, S
 ACGIH TLV: 0.5 PPM, S

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: NONE SPECIFIED BY MANUFACTURER.
 Melting Point: >203F,>95C
 Specific Gravity: 1.57
 Solubility In Water: INSOLUBLE

=====

Fire and Explosion Hazard Data

=====

Extinguishing Media: USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING

CAS# 76-44-8
 MSDS Serial BVBVF
 Heptachlor

FIRE CONDITIONS.

Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire And Expl Hazrds: EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: ALKALI METALS.

Hazardous Decomp Products: TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE, HYDRO-GEN CHLORIDE GAS.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORAL,RAT) 40 MG/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: ACUTE: MAY BE FATAL IF INHALED, SWALLOWED, OR ABSORBED THROUGH SKIN. EXPOSURE CAN CAUSE: TREMORS, CONVULSIONS,KIDNEY DAMAGE, RESPIRATORY COLLAPSE AND DEATH. CHRONIC: CARCINOGEN. REPEATED EXPOSURE CAN CAUSE: DAMAGE TO LIVER. TARGET ORGANS(S): CENTRAL NERVOUS SYSTEM, LIVER.

Carcinogenicity - NTP: YES

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: HEPTACHLOR:IARC MONOGRAPHS ON THE EVALUATION OF CARCIN RISK OF CHEMS TO MAN, VOL 53, PG 115, 1991: GRP 2B. ANIMAL LIVER.

Signs/Symptoms Of Overexp: HLTH HAZ: MAY PRODUCE CANCER AND GENETIC MUTATION.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: INGEST: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN. SKIN: FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MIN. REMOVE CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. EYE: FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MIN. ASSURE ADEQUATE FLUSHING BY SEPARATING THE EYELIDS WITH FINGERS. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR APPROP NIOSH/MSHA APPRVD SCBA, RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENT AREA & WASH SPILL SITE AFTER MATL PICKUP

IS COMPLETE.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

Precautions-Handling/Storing: DANGER: HIGHLY TOXIC. CARCINOGEN. AVOID ALL CONTACT.

Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED SCBA.

Ventilation: USE ONLY IN CHEMICAL FUME HOOD.

Protective Gloves: RUBBER GLOVES.

Eye Protection: CHEMICAL SAFETY GOGGLES.

Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

Disposal Data

Label Data

Label Required: YES

Technical Review Date: 16FEB94

Label Date: 15FEB94

Label Status: G

Common Name: HEPTACHLOR, 510C-9

Chronic Hazard: YES

Signal Word: DANGER!

Acute Health Hazard-Severe: X

Contact Hazard-Slight: X

Fire Hazard-None: X

Reactivity Hazard-None: X

Special Hazard Precautions: ACUTE: MAY BE FATAL IF INHALED, SWALLOWED/
ABSORBED THROUGH SKIN, CAUSING TREMORS, CONVULSIONS, KIDNEY DAMAGE,
RESPIRATORY COLLAPSE & DEATH. CHRONIC: CANCER HAZARD. CONTAINS HEPTACHLOR,
WHICH IS LISTED AS A LIVER CARCINOGEN TO ANIMALS (FP N).

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: POLYSCIENCE

Label Street: 7800 MERRIMAC AVE

Label City: NILES

Label State: IL
Label Zip Code: 60648
Label Country: US
Label Emergency Number: 321-965-0611

=====
URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 161

PRODUCT: HEXANE

PART NUMBER:

FORMULA: C6H14

KEYWORD: SOLVENT

PORTS NUMBER: 66-067-3255; 660673256-4; 66-067-3256

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=330

MANUFACTURER:

EM SCIENCE
480 DEMOCRAT RD., POB 70
GIBBSTOWN
NJ

08027

PHONE: 609-354-9200

EMERGENCY PHONE: 800-424-9300

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	EQ 149 F	NOTE: 65'C.
Melting Point. . . .	EQ -139 F	NOTE: -95'C.
Freezing Point. . . .	NG	
Pour Point.	NG	
Softening Point. . . .	NG	
Specific Gravity . . .	EQ .6603	
Vapor Pressure	EQ 125	NOTE: 20'C.
Vapor Density.	EQ 3.0	
Percent Volatiles. . .	EQ 100	
Evaporation Rate . . .	EQ 9.0	NOTE: BUAC=1.
pH	NG	
Molecular Weight . . .	EQ 86.18	
Viscosity.	NG	
Solubility in Water. .	SLIGHT.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . .	EQ -7 F	NOTE: CC.
Flash Point, Open Cup . . .	NG	
Fire Point.	NG	
Auto Ignition.	NG	
Explosive/Flammable Limits		
Lower (LEL).	EQ 1.2	
Upper (UEL).	EQ 7.5	

Shipping Regulations

UN/NA Number. UN1208
D.O.T. Hazard Class. . . NG
Label NOT GIVEN
Proper Shipping Name . . . HEXANE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 2/24/95

===== Component Information =====

HEXANE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 180
ACGIH TLV (PPM): .
ACGIH TLV (MG/M3): 176
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 90.00
C.A.S. No.: 110543

Note:

PEL & TLV: 50 PPM.

METHYLPENTANES

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BT .0 5
C.A.S. No.: NOT GIVEN

Note:

CAS #: UNKNOWN.

BENZENE

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ .0002
C.A.S. No.: 71432

Note:

TRACE LEVELS MAY BE CONTAINED.

===== NAME AND PRODUCT =====

COMMON NAME (ON LABEL): HEXANE

TRADE NAME SYNONYMS: HEXANE, HEXANES

CHEMICAL FAMILY: ALIPHATIC HYDROCARBON

CHEMICAL FORMULA: C6H14

CHEMICAL NUMBER: MHX0297-1

ITEM NUMBER: 0423152

VNDR CATLG NBR:

ENTRY DATE: 02-24-90

CHANGE DATE: 02-24-95 SPECIAL REQUEST

EMERGENCY PHONE: 800-424-9300 (CHEMTREC)

MANUFACTURER'S NAME AND ADDRESS:

E M SCIENCE

A DIV OF EM INDUSTRIES
P.O. BOX 70
GIBBSTOWN, NJ 08027

SUPPLIER'S NAME AND ADDRESS:

CURTIN MATHESON SCIENTIFIC, INC.
9999 VETERANS MEMORIAL
DOCK A
HOUSTON, TX 77038

===== HAZARDOUS INGREDIENTS =====

SEE COMPONENT INFORMATION.

HAZARDOUS COMPONENT	TLV	PEL
HEXANE	.000 SEE HEALTH HAZARD DATA Section	.000 SEE HEALTH HAZARD DATA Section

PEL: Permissible Exposure Limit established by the Occupational Safety and Health Administration (OSHA).

TLV: Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 1986-87.

OTHER INGREDIENT INFORMATION:

ALSO CONTAINS METHYLPENTANES 0-5% CAS# UNKNOWN. MAY CONTAIN TRACE LEVELS (0.0002%) BENZENE CAS# 71-43-2.

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: -7' F (CC)

LOWER EXPLOSIVE LIMIT: 1.2

UPPER EXPLOSIVE LIMIT: 7.5

EXTINGUISHING MEDIA: CARBON DIOXIDE, DRY CHEMICAL, FOAM.

UNUSUAL FIRE AND EXPLOSION HAZARDS: DANGEROUS FIRE AND EXPLOSION HAZARD.
VAPOR CAN TRAVEL DISTANCES TO IGNITION SOURCE AND FLASH BACK.

SPECIAL FIRE FIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS.

===== HEALTH HAZARD DATA =====

HEALTH HAZARDS (ACUTE & CHRONIC): SEE SIGNS AND SYMPTOMS OF EXPOSURE.

PRIMARY ROUTES OF EXPOSURE: INHALATION, INGESTION, OR SKIN CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE: TOXIC BY INGESTION AND INHALATION. VAPOR INHALATION CAUSES IRRITATION OF NASAL AND RESPIRATORY PASSAGES, HEADACHE, DIZZINESS, NAUSEA, CENTRAL NERVOUS SYSTEM DEPRESSION. CHRONIC OVEREXPOSURE CAN CAUSE SEVERE NERVE DAMAGE. MAY CAUSE IRRITATION ON CONTACT WITH SKIN OR EYES. MAY CAUSE DAMAGE TO KIDNEYS.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: KIDNEY, RESPIRATORY, AND CNS CONDITIONS.

CARCINOGENICITY: THIS MATERIAL IS NOT LISTED AS CANCER CAUSING AGENT.

NTP: NO
IARC: NO
OSHA: NO

EMERGENCY AND FIRST AID PROCEDURES: GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.

SKIN: WASH THOROUGHLY WITH SOAP AND WATER.

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES.

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.

INGESTION: DO NOT INDUCE VOMITING; GET MEDICAL ATTENTION.

THRESHOLD LIMITS/TOXICITY DATA:

HEXANE:

OSHA-PEL: TWA 50 PPM, 180 MG/M3.
ACGIH-TLV: TWA 50 PPM, 176 MG/M3.

TOXICITY DATA:

IHL-HMN TCLO: 5000 PPM/10M;
ORAL-RAT LD50: 28710 MG/KG.

TOXICOLOGICAL FINDINGS: TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS. CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS).

===== REACTIVITY DATA =====

STABILITY: STABLE

CONDITIONS TO AVOID: HEAT; CONTACT WITH IGNITION SOURCES.

INCOMPATIBILITY (MATERIALS TO AVOID): OXIDIZERS

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: COX

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: DOES NOT OCCUR.

===== SPILL, LEAK AND DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE/PERSONAL PROTECTION. ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE FREE FROM EXPLOSION OR FIRE HAZARDS. CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL. COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

THE FOLLOWING EM SCIENCE SPILL-X ABSORBENT IS RECOMMENDED FOR THIS PRODUCT: SX0863 SOLVENT SPILL TREATMENT KIT.

WASTE DISPOSAL METHOD:

EPA WASTE NUMBERS: D001. INCINERATION, FUELS BLENDING OR RECYCLE. CONTACT YOUR LOCAL PERMITTED WASTE DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT

SITES. ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

===== SPECIAL PROTECTION INFORMATION =====

RESPIRATORY PROTECTION: MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH ADEQUATE VENTILATION. IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING AND OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

LOCAL VENTILATION: SEE RESPIRATORY PROTECTION ABOVE.

MECHANICAL VENTILATION: SEE RESPIRATORY PROTECTION ABOVE.

SPECIAL VENTILATION: SEE RESPIRATORY PROTECTION ABOVE.

OTHER VENTILATION: SEE RESPIRATORY PROTECTION ABOVE.

PROTECTIVE GLOVES: (NITRILE OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT.

EYE PROTECTION: SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NO OTHER PROTECTIVE CLOTHING GIVEN.

===== SPECIAL PRECAUTIONS =====

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: KEEP CONTAINER CLOSED. STORE IN A COOL AREA AWAY FROM IGNITION SOURCES AND OXIDIZERS. DO NOT BREATHE VAPOR. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT. RETAINED RESIDUE MAY MAKE EMPTY CONTAINERS HAZARDOUS; USE CAUTION! WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE INTERNALLY. EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

===== OTHER INFORMATION =====

MISCELLANEOUS INFO.:

NFPA HAZARD RATINGS:

HEALTH: 1
FLAMMABILITY:
REACTIVITY:

DOT SHIPPING NAME: HEXANE.

DOT NUMBER: UN1208.

N/A= NOT AVAILABLE.

N/E= NONE ESTABLISHED.

N/G= NOT GIVEN.

THE INFORMATION, DATA AND RECOMMENDATIONS CONTAINED HEREIN WERE PROVIDED TO CMS BY THE MANUFACTURER NAMED ON THIS MATERIAL SAFETY DATA SHEET. CMS MAKES NO WARRANTY OF ANY KIND WHATEVER WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON. CMS RESERVES THE RIGHT TO REVISE THIS MATERIAL SAFETY DATA SHEET AS NEW INFORMATION IS PROVIDED TO IT BY ITS MANUFACTURER.

NICKEL SPECIAL #5630

MSDS 49, Hydrochloric Acid

62-28-1180

MATERIAL SAFETY DATA SHEET

720-5

Rec'd
11-21-91

PREPARATION/REVISION DATE:

September 24, 1990

SECTION I

MANUFACTURER'S NAME:

SELETRONS LTD.

EMERGENCY TELEPHONE:

(203) 755-9900

ADDRESS:

137 MATTATUCK HEIGHTS RD., P.O. BOX 115, WATERBURY, CT 06725-0115

CHEMICAL NAME:

Electrolyte Nickel Solution

COMMON NAME:

SPS 5630

Selectron Nickel (Special)

CHEMICAL FAMILY:

Mineral Acids

FORMULA:

Ni SO . C H O
4 2 4 2

N/A = NOT APPLICABLE

N/E = NOT ESTABLISHED

SECTION II HAZARDOUS INGREDIENTS

CHEMICAL AND COMMON NAME	%	APPLICABLE EXPOSURE LIMITS		
		PEL-WISHA/OSHA	TLV-ACGIH	OTHER
Nickel Sulfate CAS #7786-81-4	<42	.1mg/m ³	.1mg/m ³	
Acetic Acid CAS #64-19-7	<5	25mg/m ³	10 ppm	
Hydrochloric Acid CAS#7647-01-0	<9	C 5 ppm	C 5 ppm	
Balance Non-hazardous ingredients and/or water	<44			

NFPA Rating: Health=3

Fire=0

Reactivity=1

WHIMIS: Class E - Corrosive Material

CARCINOGENIC INGREDIENTS

CHEMICAL AND COMMON NAME	%	REFERENCE SOURCE		
		NTP	IARC	WISHA/OSHA
Nickel Sulfate CAS #7786-81-4	<36		X	

SPS 5630

SECTION III HEALTH HAZARD DATA

ACUTE HEALTH EFFECTS: Immediate irritation to eyes, nose and throat. Inhalation of vapor can cause severe damage to lining of nose, throat and lungs. Contact can cause severe damage to eyes and skin.

CHRONIC HEALTH EFFECTS: Continuous heavy exposure to fumes can cause respiratory disease and tissue damage.

ROUTES OF ENTRY: Inhalation, absorption.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Chronic respiratory conditions in persons with impaired pulmonary function. Persons with pre-existing skin disorders may be more susceptible than others.

EMERGENCY AND FIRST AID PROCEDURES:

EYES - Immediately flush with large amounts of water for at least 15 minutes. Consult a physician.

SKIN - Flush area with large amounts of water for at least 15 minutes.

SWALLOWED - Give large quantities of water to dilute the acid. DO NOT INDUCE VOMITING. Get medical attention immediately.

INHALATION - Remove person to fresh air.

SECTION IV CHEMICAL DATA

BOILING POINT F	N/A	SPECIFIC GRAVITY (H2O=1)	1.05
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (____=1)	N/A
SOLUBILITY (Specify Solvents):	pH		
Miscible in all proportions.	0.6		

APPEARANCE AND ODOR: Green colored solution with a strong, pungent vinegar odor.

SPS 5630

SECTION V PHYSICAL HAZARD DATA

FLASH POINT (Method used): N/A		FLAMMABLE LIMITS: N/A		Lel	Uel
EXTINGUISHING MEDIA: No restrictions					
SPECIAL FIRE FIGHTING PROCEDURES: N/A					
UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A					
INCOMPATIBILITY (Materials to avoid): Strong oxidizers (chromic acid, nitric acid, sodium peroxide).					
HAZARDOUS DECOMPOSITION PRODUCTS: N/A					
				CONDITIONS TO AVOID: N/A	
HAZARDOUS POLYMERIZATION	MAY OCCUR				
	WILL NOT OCCUR	X			
STABILITY	UNSTABLE				
	STABLE	X			

SECTION VI SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Ventilate area. Can be neutralized with soda ash or absorbed with an inert material. A respirator should be worn, the size depending upon the quantity spilled.	
WASTE DISPOSAL METHOD: Must be disposed of in accordance with State and Federal Regulations.	

SECTION VII EXPOSURE CONTROL INFORMATION

RESPIRATORY PROTECTION (Specify type):

Dust and mist and fume respirator, 3M #9920 - NIOSH approved

VENTILATION	LOCAL EXHAUST: adequate exhaust	SPECIAL: N/A
	MECHANICAL (General): N/A	OTHER: N/A

PROTECTIVE GLOVES:
Impervious rubber

EYE PROTECTION:
Chemical splash safety goggles.

OTHER PROTECTIVE EQUIPMENT: Any other equipment so as not to splash on skin.

OTHER ENGINEERING CONTROLS: N/A

WORK PRACTICES: Eating and smoking should not be permitted in areas where this material is handled. Proper training should be given to personnel handling this material.

HYGIENIC PRACTICES: Employees who handle this material should wash their hands and face thoroughly before eating, smoking or using rest room facilities.

SECTION VIII SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Where there is any possibility of exposure to this material, safety showers and eye wash facilities should be in the immediate work area for emergency use. Vent before opening. Keep away from heat and sunlight.

MAINTENANCE PERSONNEL: N/A

OTHER PRECAUTIONS: If clothing should become splashed or contaminated with this product, it should be drenched with water and not worn again until laundered.

HYDROFLUORIC ACID, ANHYDROUS

MATERIAL SAFETY DATA SHEET

A. GENERAL INFORMATION

Trade Name(Common Name) Hydrofluoric Acid, Anhydrous (HF, Anhydrous HF,AHF, Hydrogen Fluoride)		(X)CAS No.()Allied Product Code 7664-39-3	
Chemical Name and/or Synonym Hydrogen Fluoride			
Formula HF		Molecular Weight 20.01	
Address (No.,Street,City,State, and Zip Code) ALLIED-SIGNAL,INC. ENGINEERED MATERIALS SECTOR P.O. Box 1139R Morristown N.J. 07962			
Contact Product Safety Dept.	Phone Number (201) 455-4157	Last Issue Date August, 1991	Current Issue Date December, 1991

B. FIRST AID MEASURES

Exposure to hydrofluoric acid requires special treatment. See pages 7-8 and References (k-n).	Emergency Phone Number (201) 455-2000
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C. HAZARDS INFORMATION HEALTH

Inhalation

Mild exposure: Can irritate nose, throat and respiratory system. Onset of symptoms may be delayed for several hours. Severe exposure: Can cause nose and throat burns, lung inflammation and pulmonary edema. Also results in other systemic effects including depletion of calcium levels in the body which if not promptly treated can result in death due to hypocalcemia. LC₅₀'s (animal) range from 342 to 1774 ppm/1H -Reference (a).

Ingestion

Can cause severe mouth, throat and stomach burns and be fatal if swallowed. Even with small amounts or dilute solutions profound and possibly fatal hypocalcemia and systemic toxicity is likely to occur unless medical treatment is promptly initiated - Reference (d).

C. HAZARDS (CONT.)

Skin

Both liquid and vapor can cause severe burns which may not be immediately painful or visible. HF will penetrate skin and attack underlying tissues and bone. Large burns (over 25 square inches) may also cause hypocalcemia and other systemic effects which may be fatal. Solutions as dilute as 2% or lower may cause burns - Reference (h).

Eyes

Both liquid and vapor can cause irritation or corneal burns and conjunctivitis. Solutions as dilute as 2% or lower may cause burns - Reference (h).

Permissible Concentration: Air (See Section J)

TWA OSHA PEL = 3 ppm (2.6 mg/m³) as F

OSHA STEL = 6 ppm (5.2 mg/m³) as F

ACGIH TLV = 3 ppm (2.6 mg/m³) as F (Ceiling)

Biological mg/L (F) in urine 4 (pre-shift) 7 (post-shift) see reference (e)

Unusual Chronic Toxicity

Bone and joint changes in humans (Fluorosis).

HF is not a carcinogenic substance as listed by IARC, NTP, ACGIH or OSHA.

FIRE AND EXPLOSION

Flash Point °C
Not Flammable
() Open Cup () Closed Cup

Autoignition °C
Temperature
NA

Flammable Limits In Air(% By Vol.)
Lower - NA Upper - NA

Unusual Fire and Explosion Hazards

Reaction with certain metals generates flammable and potentially explosive hydrogen gas. Considerable heat is evolved when contacted with many substances. Heat increases pressure and may explode container. Will react violently with water.

D. PRECAUTIONS/PROCEDURES

Fire Extinguishing Agents Recommended

Use water or suitable agent for fires adjacent to non-leaking tanks or containers of HF.

Fire Extinguishing Agents To Avoid

Do not use solid water streams near ruptured tanks or spills of HF. Acid reacts violently with water and can splatter acid onto personnel.

Special Fire Fighting Precautions

Wear self-contained breathing apparatus approved by NIOSH and full protective clothing (see Section E). Use water spray to keep containers cool.

D. PRECAUTIONS/PROCEDURES (CONT.)**Ventilation**

Sufficient to reduce vapor and acid mists below permissible TLV levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems.

Normal Handling

Do not breathe vapor or mist. Use only with adequate ventilation. Avoid all contact with skin, eyes, and clothing, even dilute solutions. Do not add water to acid.

Storage

Store in approved containers only. Store in cool, well-ventilated area. Flammable hydrogen gas can be generated in metal storage containers. Diking of storage tanks is recommended. Unlined carbon steel storage tanks in HF service may be subject to indiscriminate hydrogen blistering and should, therefore, be routinely inspected and repaired if needed. Non-destructive tank thickness testing (NDT) should be utilized for periodic checks of tank wall thickness. See also section K

Spill or Leak (ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT - SECTION E)

Good ventilation is necessary. Discharge will ordinarily be a vapor or a liquid that rapidly vaporizes. Full protective equipment described in Section E must be used by those treating spills or repairing leaks. (See Section I for disposal methods). Attempt to keep out of sewer. Any release to the environment of this product may be subject to Federal and/or state reporting requirements. Check with appropriate authorities.

Special: Precautions/Procedures/Label Instructions Signal Word - DANGER! POISON!

Employees should be thoroughly trained in safety procedures. (See references). To prevent ignition of hydrogen gas that may be present from contact with metals, smoking, flames and sparks should not be permitted in storage areas.

E. PERSONAL PROTECTIVE EQUIPMENT**Respiratory Protection**

Where required, use a respirator approved by NIOSH for HF gas or mists, as applicable. Some exposures may require a NIOSH-approved, self-contained breathing apparatus or air-supplied respirator. See References (e), (g).

Eyes and Face

As a minimum, wear hard hat, chemical safety goggles (plastic lenses), full face plastic shield. Do not wear contact lenses. For increased protection, use air-supplied acid hood.

Hands, Arms, and Body

For routine product use, wear acid-resistant jacket, trousers, boots and gauntlet gloves. For increased protection, use air-supplied acid suit.

Other Clothing and Equipment

Eyewash and quick-drench shower facilities, protected from freezing, should be available where HF is stored or handled.

F. PHYSICAL DATA

Material Is (At Normal Conditions): <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/>		Appearance and Odor Colorless liquid, fumes in air. Sharp pungent odor.
Boiling Point 67.2°F (19.54°C) Melting Point -118°F (-84°C)	Specific Gravity (H ₂ O=1) 0.980	Vapor Density (Air = 1) 2.21 @ 70°F; 1.97 @ 75°F; 1.76 @ 80°F
Solubility in Water (% by Weight) Complete	pH NA	Vapor Pressure Hg at 20°C(X) (PSIG)() 776
Evaporation Rate (Butyl Acetate=1) (x) (Ether=1) () (time to evaporate) () Greater than 1		% Volatiles by Volume (At 20°C) 100

G. REACTIVITY DATA

Stability <input type="checkbox"/> Unstable <input checked="" type="checkbox"/> Stable	Conditions to Avoid NA
Incompatibility (Materials to Avoid) (1) Glass, concrete and other silicon-bearing materials: yield silicon tetrafluoride gas. Pressure buildup from this process has been known to blow up glass containers. Other hazards of this gas: See Reference (i). (2) Carbonates, sulfides, and cyanides: yield toxic gases: carbon dioxide, hydrogen sulfide, and hydrogen cyanide. (3) Alkalies, some oxides: cause strong exothermic reactions that can be violent. (4) Common metals: yield hydrogen gas, a fire and explosive hazard and a reaction to HF. (5) Corrosive to many materials including leather, rubber and many organics. (6) Considerable heat is evolved and violent reaction can occur if water is added to HF.	
Hazardous Decomposition Products NA; boils away unchanged (see Section F).	
Hazardous Polymerization <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur	Conditions to Avoid NA

H. HAZARDOUS INGREDIENTS (MIXTURES ONLY)

Materials or Components/C.A.S. #	WT. %	Hazard Data(See Sect.J)
NA		

I. ENVIRONMENTAL

Degradability/Aquatic Toxicity Aquatic toxicity: 60 ppm/*fish/lethal/fresh water -Reference (j). *Time period not specified.		Octanol/Water Partition Coefficient N.D.
EPA Hazardous Substance? Yes (X) No () If So Reportable: <u>100</u> # (Clean Water Act Sect. 311) Quantity		40 CFR 116-117
Waste Disposal Methods (Disposer Must Comply With Federal, State and Local Disposal or Discharge Laws) As waste disposal methods may vary, contact the supplier for specific recommendations. Treat small amounts by adding to an excess of water and neutralize with a lime slurry, limestone, soda ash or other alkali. Add to water and neutralize cautiously as reaction is immediate and can be violent. Considerable amounts of harmful vapors may be released. Good ventilation is required. Dispose of residue (or slurry) by removal to an approved chemical wastes landfill or by an approved disposal contractor.		
RCRA Status of <u>Unused</u> Material If Discarded: EPA Hazardous Waste.	Hazardous Waste Number:(If Applicable) U134 (hydrofluoric acid)	40 CFR 261

J. REFERENCES

Permissible Concentration References 29 CFR 1910.1000 "Z1A Table", OSHA, 1989. Threshold Limit Values and Biological Exposure Indices for 1990-1991, ACGIH.		
Regulatory Standards This product is not sold for food or drug use. TSCA Inventory status: Included (as of 1978).	D.O.T. Information: Proper Shipping Name: Hydrogen Fluoride, Anhydrous Classification: Corrosive, Poison - Inhalation Hazard UN Number: 1052	49 CFR 172.101

General

- (a) NIOSH Registry of Toxic Effects of Chemical Substances. 1985-86.
- (b) Gosselin, et. al., Clinical Toxicology of Commercial Products, 5th Ed. 1984
- (c) NFPA Manual 49, "Fire Protection Guide on Hazardous Materials", 10th Ed., 1991.
- (d) Manoguerra, A.S., "Fatal Poisoning from Acute Hydrofluoric Acid Ingestion" *Am. J. Emerg. Med.* 4:362-3, 1986.
- (e) NIOSH Criteria Document, Hydrogen Fluoride, Mar. 1976, Health and Human Services Department, Washington.
- (f) Allied-Signal, Inc. Wall chart on Hydrofluoric Acid.
- (g) NIOSH/OSHA Manual, "Pocket Guide to Chemical Hazards", June 1990.
- (h) Derelanko, M.J., et. al., "Acute Dermal Toxicity of Dilute Hydrofluoric Acid", *J. Toxicol.* 4:73-85, 1985.
- (i) Stokinger, H. E., "The Halogens and the Nonmetals Boron and Silica", Chapter 40; Patty's Industrial Hygiene and Toxicology, G. V. Clayton and F. E. Clayton (Eds.), 3rd Ed., 1981, Volume 2B, p. 2939.
- (j) Coast Guard CHRIS system, form HFX, "Hydrogen Fluoride", Oct. 1978.
- (k) Vance, Michael V, et. al., "Digital Hydrofluoric Acid Burns: Treatment with Intraarterial Calcium Infusion". *Ann. Emerg. Med.* 15:890-896, Aug. 1986
- (l) MacKinnon, M.A., "Hydrofluoric Acid Burns". *Derm. Clin. N.Am.* 6:67-74, January, 1988.
- (m) Edelman, Philip, "Hydrofluoric Acid Burns". *State Art. Rev.: Occup. Med.* 1:89-103, Jan.-Mar., 1986.
- (n) Allied-Signal Inc. "Recommended Medical Treatment for Hydrofluoric Acid Exposure", 1991.

K. Additional Information

Information (Hazards, precautions, first aid, etc) is abbreviated. More detailed information is contained in the references given in Section J.

MSDS FILE # - 879

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

ALLIED-SIGNAL, INC. PROVIDES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

SECTION B. FIRST AID MEASURES AND MEDICAL TREATMENT**A. For Acid Burns to the Body (Not the Eyes)**

1. Remove the victim from the contaminated area and immediately place under a safety shower or wash the burned area with a water hose, whichever is available.
2. Remove all contaminated clothing while washing continuously.
3. Keep washing with large amounts of water for a minimum of 15 to 20 minutes; this may be reduced to 5 minutes if appropriate first aid or medical treatment is readily available. (See 5a-5c).
4. Have someone make arrangements for medical attention while continuing to flush the affected area with water.
- 5(a) After thorough washing for at least 5 minutes, the burned area should be immersed in a solution of 0.13% iced aqueous Zephiran® Chloride.* If immersion is not practical, towels should be soaked with the above solution and used as compresses for the burned area. Ideally, compresses should be changed every 2 minutes. Soaking should continue until pain is relieved, up to 4 to 6 hours. At our plants we generally keep 10 - 15 liters of solution made up available for use. Solutions are replaced annually if not previously used.
- 5(b) As an alternate first aid treatment 2.5% calcium gluconate gel** may be promptly and continuously massaged into the burned area, until pain is relieved.
- 5(c) For larger burns, or for burns with concentrated HF, or if pain is not relieved by soaking in Zephiran® (5a) or by calcium gluconate gel (5b), or as an alternative to treatments in 5(a) or 5(b), the treatment is for the physician to inject sterile 5% aqueous calcium gluconate solution subcutaneously beneath, around, and in the burned area. Initially use no more than 0.5 cc per square centimeter and do not distort appearance of skin. If pain is not completely relieved, additional treatment is indicated. (5% calcium gluconate solution may be prepared by mixing equal parts of 10% calcium gluconate solution with normal saline.)
6. Seek medical attention as soon as possible for all burns regardless of how minor they may appear initially.

B. For Acid in the Eyes

1. Irrigate eyes for at least 15 minutes with copious quantities of water, keeping eyelids apart and away from eyeballs during irrigation.
2. Get competent medical attention immediately preferably an eye specialist.
3. If a physician is not immediately available, apply one or two drops of 0.5% Pontocaine® Hydrochloride*** solution followed by a second irrigation for 15 minutes. Do not use the solution described for skin treatment. Use no oils or greases unless instructed to do so by a physician.
4. Irrigate with 1% calcium gluconate in normal saline for 1 to 2 hours to prevent or lessen corneal damage.

C. If HF is Swallowed

1. Drink large amounts of water to dilute. Do not induce vomiting.
2. Several glasses of milk or several ounces of milk of magnesia may be given for their soothing effect.
3. Take victim to a doctor.

D. First Aid for Inhalation

1. Move to fresh air. Keep the victim lying down, quiet and warm.
2. Get competent medical attention immediately.
3. If breathing has stopped, start artificial respiration at once.
4. Oxygen should be administered to a victim who is having difficulty breathing and by an authorized person only, until the victim is able to breathe easily by himself.
5. Do not give stimulants unless instructed to do so by a physician.
6. Victim should be examined by a physician and held under observation for at least 24-hours.
7. Note to Physician: Treat as chemical pneumonia. Monitor for hypocalcemia. 2.5% calcium gluconate in normal saline by nebulizer or by IPPB with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered.

NOTE TO PHYSICIAN: For burns of large skin areas, (greater than 25 square inches), for ingestion and for significant inhalation exposure, severe systemic effects may occur. Monitor and correct for hypocalcemia, cardiac arrhythmias, hypomagnesemia and hyperkalemia. In some cases renal dialysis may be indicated. For certain burns, especially of the digits, use of intra-arterial calcium gluconate may be indicated. (Reference k).

*Zephiran Chloride is a trade name for Benzalkonium Chloride, Merck Index (10th Ed.) monograph 1055, a quaternary ammonium compound, sold by Winthrop Laboratories, N.Y.C., NY 10016.
Pontocaine Hydrochloride is a trade name for Tetracaine Hydrochloride, Merck Index (10th Ed.) monograph 9014, sold by Winthrop Laboratories, N.Y.C., NY 10016.

**Calcium gluconate gel may be prepared by mixing 2.5 gms of calcium gluconate USP in 100 ml of surgical water soluble lubricant (e.g. KY Jelly, Johnson & Johnson Products, Inc., New Brunswick, NJ 08903) or by mixing one 10 cc ampule of 10% calcium gluconate solution per 1.5 oz of KY Jelly.

***Pontocaine Hydrochloride is a trade name for Tetracaine Hydrochloride, Merck Index (10th Ed.) monograph 9014, sold by Winthrop Laboratories, N.Y.C., NY 10016.

Environmental Data Sheet

Supplement to MSDS: Hydrofluoric Acid, AnhydrousCurrent Issue Date: 12-1991 MSDS #: 879

SARA - TITLE III (40 CFR 300)

1. This product contains the following extremely hazardous substance(s)
(Sections 302 and 304):

<u>Component</u>	<u>TPQ (LBS)</u>	<u>RQ (LBS)</u>
Hydrofluoric Acid	100	100

2. This product contains the following CERCLA hazardous substance(s)
(Section 302 and 304)

<u>Component</u>	<u>WT %</u>	<u>RQ (LBS)</u>
Hydrofluoric Acid	100	100

NOTE: THE INFORMATION PROVIDED IN SECTION 1 AND 2 IS REQUIRED FOR
EMERGENCY RESPONSE REPORTING.

3. This product has the following hazards (Sections 311 and 312):

	<u>YES</u>	<u>NO</u>
Immediate	X	
Delayed	X	
Fire		X
Pressure		X
Reactive	X	

4. This product contains the following toxic chemicals (Section 313):

<u>Component</u>	<u>CAS #</u>	<u>WT %</u>
Hydrofluoric Acid	7664-39-3	100

For additional information on the above chemicals see the material safety data sheet.

PORTS MSDS #: 5012

PRODUCT: ISOPROPYL ALCOHOL

PART NUMBER:

FORMULA:

KEYWORD: SOLVENT

PORTS NUMBER: 03-401-4421; 03-450-0140

PORTS MISC INFO:

01-01-4421

95-01-4545

PORTS RATING: HFR=230

MANUFACTURER:

CORCO CHEMICAL CORP.

TYBURN RD. & CEDAR LANE

FAIRLESS HILLS

PA

19030

PHONE: PHONE:

EMERGENCY PHONE: 215-295-5006

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 180 F

NOTE: 82.5'C.

Melting Point. . . . EQ -128 F

NOTE: -89'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . . NG

Specific Gravity . . EQ .7854

NOTE: @ 20'/4'C.

Vapor Pressure . . . EQ 33

NOTE: MM HG @ 20'C.

Vapor Density. . . . EQ 2.07

Percent Volatiles. . NG

Evaporation Rate . . NA

pH NG

Molecular Weight . . NG

Viscosity. NG

Solubility in Water. MISCIBLE.

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODOR OF RUBBING ALCOHOL.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 53 F

NOTE: 11.6'C.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NG

Explosive/Flammable Limits

Lower (LEL). EQ 2

Upper (UEL). EQ 12

Shipping Regulations

UN/NA Number. UN1219

D.O.T. Hazard Class. . . FLAMMABLE LIQUID

Label NOT GIVEN

Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: SIGNATURE

Date Prepared/Revised 6/05/91

==== Component Information =====

ISOPROPYL ALCOHOL

OSHA PEL (PPM): .

OSHA PEL (MG/M3): 980

ACGIH TLV (PPM): N*

ACGIH TLV (MG/M3):

STEL (PPM): NG

STEL (MG/M3):

Product #: NG

C.A.S. No.: 67630

Note:

PEL:400PPM; TLV:NOT REPORTED; IDLH:12000PPM; NIOSH

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

IDENTITY (AS USED ON LABEL AND LIST): Isopropyl Alcohol

#1901

EMERGENCY TELEPHONE NUMBER: (215) 5006/5007

TELEPHONE NUMBER FOR INFORMATION:

MANUFACTURER'S NAME AND ADDRESS:

CORCO CHEMICAL CORPORATION

TYBURN RD. & CEDAR LANE

FAIRLESS HILLS, PENNA. 19030

===== HAZARDOUS INGREDIENTS/IDENTITY INFORMATION =====

SEE COMPONENT INFORMATION.

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL
IDENTITY; COMMON NAME(S))

IsoPropyl Alcohol, C3H8O

COMMON NAMES (SYNONYMS)

iso-Propanol

2-Propanol

Sec-Propyl Alcohol

Dimethylcarbinol

Petrolol

IPA

INDEXED AS:

RTECS: NT 8050000

UN 1219

NFPA: 130

DOT: Flammable Liquid

===== PHYSICAL/CHEMICAL CHARACTERISTICS =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

EXTINGUISHING MEDIA: CO₂, Dry chemical, Alcohol Foam, Water Spray

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full protective equipment. Cool flame exposed containers with water until well after fire is out.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Auto ignition @ 852°F. Flame of alcohol fire may not be visible! Container may explode in heat of fire.

===== REACTIVITY DATA =====

STABILITY: Stable

CONDITIONS TO AVOID: Heat, Spark, Flame

INCOMPATIBILITY (MATERIALS TO AVOID): Strong Oxidizers

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: CO_x

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: Heat, Spark, Flame, Oxidizers

===== HEALTH HAZARD DATA =====

ROUTE(S) OF ENTRY:

INHALATION: Yes

SKIN: Yes

INGESTION: Yes

HEALTH HAZARDS (ACUTE AND CHRONIC): Eye, Nose, Throat irritant, Narcosis at high concentrations. Product not considered an important toxic hazard and has good warning properties.

Ingestion of 100 ml may be fatal.

CARCINOGENICITY:

NTP: Not reported

IARC MONOGRAPHS: Reported; Indefinite

OSHA REGULATED: Not as carcinogen

NOTE: Possible carcinogen-consult literature.

SIGNS AND SYMPTOMS OF EXPOSURE: Blushing, Headache, Mental depression, Nausea, Vomiting, Narcosis, Coma, Ingestion may be fatal.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Eye, Skin, Sinuses, Respiratory

EMERGENCY AND FIRST AID PROCEDURES:

EYE, SKIN: Immediate water flush.

INHALATION: Fresh air. Artificial respiration.

INGESTION: If conscious induce vomit. Call Physician!

===== PRECAUTIONS FOR SAFE HANDLING AND USE =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Eliminate ignition
sources. For major spill, wear self-contained breathing apparatus
and full
protective equipment. Use water spray to reduce vapors. Take up
with
non-combustible absorbent and containerize for later disposal.

WASTE DISPOSAL METHOD: To be performed in compliance with all
local, State,
and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid breathing
vapor. Do
not get liquid or vapor in Eyes, on Skin, on Clothing. Keep
container closed,
away from heat and flame.

OTHER PRECAUTIONS: Observe all precautions when handling "Empty"
containers
and possible residue therein.

===== CONTROL MEASURES =====

RESPIRATORY PROTECTION (SPECIFY TYPE): Full face organic vapor
chemical
cartridge respirator @ 1000 ppm

VENTILATION:

LOCAL EXHAUST: Recommended (Explosion Proof)
MECHANICAL (GENERAL): Recommended (Explosion Proof)
SPECIAL:
OTHER:

PROTECTIVE GLOVES: Rubber

EYE PROTECTION: Full face shield, Splash goggles

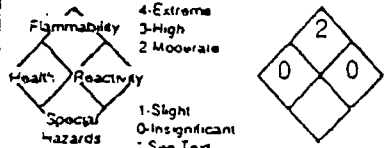
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Grounded containers.
Protective
coveralls. Eye wash. Safety Shower.

WORK/HYGIENIC PRACTICES: Work safely. Respect the material. Wash
after
handling.



BP OIL

MATERIAL SAFETY DATA SHEET

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD SYMBOL*
BP America (In Ohio): 800-362-8059 (Outside Ohio): 800-321-8642 CHEMTREC Assist: 800-424-9300	216-441-8124	
MSDS Number > 1025		

MANUFACTURER/SUPPLIER: BP Oil Company
ADDRESS: 200 Public Square, Cleveland, OH 44114-2375

PRODUCT IDENTIFICATION

TRADE NAME:

1-K KEROSENE

CAS NUMBER: 64741-77-1
ONYM(S): LIGHT HYDROCRACKED DISTILLATE; MIDDLE DISTILLATE
ICAL FAMILY: PETROLEUM HYDROCARBONS
MOLECULAR FORMULA: MIXTURE
MOLECULAR WEIGHT: NA
PRODUCT CODE: P 1419 HIERARCHY: 040.020

PRODUCT HAZARD SUMMARY

HEALTH

DANGER!
HARMFUL OR FATAL IF SWALLOWED
ASPIRATION HAZARD IF SWALLOWED--CAN ENTER LUNGS AND CAUSE DAMAGE
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT
VAPORS MAY BE HARMFUL
SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

FLAMMABILITY

CAUTION!
COMBUSTIBLE LIQUID & VAPOR

REACTIVITY

STABLE

PRODUCT HEALTH HAZARD INFORMATION

INGESTION:

MODERATELY TOXIC. Human oral LDLo = ~10 mls. Aspiration into lungs may cause pneumonia. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects. Effects

may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

SKIN:

FACTICALLY NON-TOXIC. Rabbit dermal LD50 = >5 ml/kg. Repeated or prolonged contact result in defatting, redness, itching, inflammation, cracking and possible secondary infection. May cause allergic reactions in some individuals. Absorption from prolonged or massive skin contact may cause poisoning. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful (see Notes to Physician section).

EYE:

Exposure to vapors, fumes or mists may cause irritation.

INHALATION:

May cause respiratory tract irritation. Exposure may cause central nervous system symptoms similar to those listed under "Ingestion" (see Ingestion section). Degenerative changes in the liver, kidneys and bone marrow may occur with prolonged, high concentrations. Repeated or prolonged exposures may cause behavioral changes.

SPECIAL TOXIC EFFECTS:

Products of similar composition have produced skin cancer in laboratory animals and have been positive in mutagenic test systems.

NOTE: This product has not been tested as a whole for all potential health effects. It may have other health hazards related to its components. See "Ingredient/Health Hazards" for additional information.

FIRST AID

INGESTION:

NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. Get immediate medical attention. If spontaneous vomiting occurs, monitor for breathing difficulty.

SKIN CONTACT:

Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.

EYE CONTACT:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

INHALATION:

Remove affected person from source of exposure. If not breathing, ensure open airway and institute cardiopulmonary resuscitation (CPR). If breathing is difficult, administer oxygen if available. Get medical attention.

NOTES TO PHYSICIAN

In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Individuals intoxicated by 1-K Kerosene should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode,

Individuals should be followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, as injury from inhalation exposure may be complicated.

In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

PERSONAL PROTECTION INFORMATION

EYE PROTECTION:

Avoid eye contact with this material. Wear safety glasses or chemical goggles. Provide an eyewash station in the work area.

KIN PROTECTION:

Avoid skin contact. When working with this substance, wear appropriate chemical protective gloves. Depending upon conditions of use, additional protection may be necessary such as face shield, apron, armcovers, etc.

RESPIRATORY PROTECTION:

If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

PHYSICAL PROPERTIES

MELTING POINT: 148.900 C (300 F)

DENSITY: 0.825 @ 60 F

RELATIVE VAPOR PRESSURE: NA

BOILING POINT: 100.000

VAPOR PRESSURE: 0.400 MM HG @ 60 F

EVAPORATION RATE (WATER=1): SLOWER

VAPOR DENSITY (AIR=1): 4.700 (ESTIMATED)

VISCOSITY: 1.300- 2.200 CST @ 100 F

SOLUBILITY IN WATER: NEGLIGIBLE

OCTANOL/WATER PARTITION COEFFICIENT: ND

FREEZING POINT: -34.400 C (-30 F)

PH: NEUTRAL

APPEARANCE/ODOR: COLORLESS, CLEAR LIQUID WITH A HYDROCARBON ODOR.

FIRE AND EXPLOSION DATA

FLASH POINT: 48.900 C (120 F)

SELF-IGNITION TEMPERATURE: 210.000 C (410 F) ESTIMATED

FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: 0.7000

FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER: 0.5000

BASIC FIREFIGHTING PROCEDURES:

Use water spray, dry chemical, foam or carbon dioxide to extinguish fire. Use water spray to cool fire-exposed containers, structures and to protect personnel. If leak or spill ignited, ventilate area and use water spray to disperse gas or vapor and to

protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers or other drainage systems.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Igniting or toxic substances may be emitted upon thermal decomposition. Dangerous when exposed to heat or flame. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus with full face mask and full protective equipment.

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:

Stable. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

Combustion may produce CO, CO₂ and reactive hydrocarbons.

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:

If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.
- For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department.
- Notify the National Response Center, if required.

Emergency Action:

Keep unnecessary people away. Stay upwind; keep out of low areas. Isolate hazard area and deny entry. (Also see Personal Protection Information section.) Isolate for 1/2 mile in all directions if tank or tankcar is involved in fire.

Spill or Leak Procedure:

No flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Use water spray to reduce vapors. Small Spills: Take up with sand or other noncombustible absorbent material or other sorbent known to be compatible, then flush area with water. Large Spills: Dike far ahead of spill for later disposal.

Notification:

Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to

determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

SARA TITLE III INFORMATION:

Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):

Immediate Hazard: X Delayed Hazard: X Fire Hazard: X Pressure Hazard: - Reactivity Hazard: -

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

Store in tightly closed containers in cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Use non-sparking tools. Ground lines and equipment used during transfer to reduce the possibility of static spark-initiated fire or explosion.

EMPTY CONTAINERS:

Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld or reuse containers unless adequate precautions are taken against these hazards.

TRANSPORTATION REQUIREMENTS

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101):	KEROSENE
D.O.T. HAZARD CLASS (49 CFR 172.101):	COMBUSTIBLE LIQUID
UN/NA CODE (49 CFR 172.101):	UN 1223
BILL OF LADING DESCRIPTION (49 CFR 172.202):	KEROSINE, COMBUSTIBLE LIQUID, UN 1223
D.O.T. LABELS REQUIRED (49 CFR 172.101):	NA
D.O.T. PLACARDS REQUIRED (49 CFR 172.504):	COMBUSTIBLE LIQUID

INGREDIENTS/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REP.
Light hydrocracked distillate	64741-77-1	99.90-100	None established

REVISION DATE. 20-dec-1989

REPLACES SHEET DATED:

14-jul-1989

COMPLETED BY: BP OIL HSEQ DEPARTMENT

NOTICE. The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.



BP OIL

KEROSENE

MATERIAL SAFETY DATA SHEET

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD SYMBOL
BP America (In Ohio): 800-362-8059 (Outside Ohio): 800-321-8642 CHEMTREC Assist: 800-424-9300	216-441-8124	 4-Extreme 3-High 2-Moderate 1-Slight 0-Insignificant *See Text
MSDS Number > 1294		

MANUFACTURER/SUPPLIER: BP Oil Company
ADDRESS: 200 Public Square, Cleveland, OH 44114-2375

PRODUCT IDENTIFICATION

TRADE NAME:

BP KEROSENE

CAS NUMBER: 8008-20-6
SYM(S): KEROSENE; MIDDLE DISTILLATE; PROCESS STREAM
AL FAMILY: PETROLEUM HYDROCARBONS
MOLECULAR FORMULA: MIXTURE
MOLECULAR WEIGHT: NA
PRODUCT CODE: P 1410 HIERARCHY: 040.020

PRODUCT HAZARD SUMMARY

HEALTH

DANGER!
HARMFUL OR FATAL IF SWALLOWED
ASPIRATION HAZARD IF SWALLOWED--CAN ENTER LUNGS AND CAUSE DAMAGE
VAPORS MAY BE HARMFUL.
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT
HEATED MATERIAL MAY CAUSE THERMAL BURNS
SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

FLAMMABILITY

CAUTION!
COMBUSTIBLE LIQUID & VAPOR

REACTIVITY

STABLE

PRODUCT HEALTH HAZARD INFORMATION

INGESTION:

MODERATELY TOXIC. Human oral LDLo = -10 mls. Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects. Effect may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

SKIN:

PRACTICALLY NON-TOXIC. Rabbit dermal LD50 = >5 ml/kg. MODERATELY IRRITATING. Repeated or prolonged contact may result in defatting, redness, itching, inflammation, cracking and possible secondary infection. May cause allergic reactions in some individuals. Absorption from prolonged or massive skin contact may cause poisoning. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful (see Notes to Physician section). Contact with heated material may cause thermal burns.

EYE:

Exposure to vapors, fumes or mists may cause irritation. Contact with heated material may cause thermal burns.

INHALATION:

May cause respiratory tract irritation. Exposure may cause central nervous system symptoms similar to those listed under "Ingestion" (see Ingestion section). Degenerative changes in the liver, kidneys and bone marrow may occur with prolonged, high concentrations. Repeated or prolonged exposures may cause behavioral changes.

SPECIAL TOXIC EFFECTS:

Products of similar composition have produced skin cancer in laboratory animals and have been positive in mutagenic test systems. IARC has determined that there is limited evidence for the carcinogenicity of straight-run kerosene in experimental animals.

WARNING: The use of any hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products and inadequate oxygen levels.

NOTE: This product has not been tested as a whole for all potential health effects. It may have other health hazards related to its components. See "Ingredient/Health Hazards" for additional information.

FIRST AID

INGESTION:

DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. Get immediate medical attention. If spontaneous vomiting occurs, monitor for breathing difficulty.

SKIN CONTACT:

Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention. Thermal burns require immediate medical attention.

EYE CONTACT:

Flush immediately with large amounts of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

Thermal burns require immediate medical attention.

ALATION:

ve affected person from source of exposure. If not breathing, ensure open airway and
stitute cardiopulmonary resuscitation (CPR). If breathing is difficult, administer
xygen if available. Get medical attention.

NOTES TO PHYSICIAN

In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Individuals intoxicated by middle distillates should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin infection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

PERSONAL PROTECTION INFORMATION

EYE PROTECTION:

Avoid eye contact with this material. Wear safety glasses or chemical goggles. Provide an eyewash station in the work area. Do not wear contact lenses when working with this substance.

PROTECTION:

id skin contact. When working with this substance, wear appropriate chemical
otective gloves. Depending upon conditions of use, additional protection may be
necessary such as face shield, apron, armcovers, etc.

RESPIRATORY PROTECTION:

If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

PHYSICAL PROPERTIES

BOILING POINT: 148.900 C (300 F)
SPECIFIC GRAVITY: ND
MELTING POINT: NA
% VOLATILE: 100.000
VAPOR PRESSURE: 0.400 MM HG @ 68 F
EVAPORATION RATE (WATER=1): SLOWER
VAPOR DENSITY (AIR=1): 4.700
VISCOSITY: 1.400- 2.100 CST @ 100 F
% SOLUBILITY IN WATER: NEGLIGIBLE
OCTANOL/WATER PARTITION COEFFICIENT: ND
IR POINT: -34.400 C (-30 F)

ND

APPEARANCE/ODOR: COLORLESS/STRAW/COLORED CLEAR LIQUID WITH A HYDROCARBON ODOR.

FIRE AND EXPLOSION DATA

FLASH POINT: 48.900 C (120 F) TCC
AUTOIGNITION TEMPERATURE: 210.000 C (410 F)
FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: 0.700
FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER: 5.000

BASIC FIREFIGHTING PROCEDURES:

Use water spray, dry chemical, foam or carbon dioxide to extinguish fire. Use water spray to cool fire-exposed containers, structures and to protect personnel. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers or other drainage systems.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Dangerous when exposed to heat or flame. Containers may explode in heat of fire. Runoff to sewer may cause fire or explosion hazard. Irritating or toxic substances may be emitted upon thermal decomposition. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus with full face mask and full protective equipment.

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:

Stable. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

Combustion may produce CO, CO₂ and reactive hydrocarbons.

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:

If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.
- For technical advice and assistance related to this spill, call the National Response Center (800/424-9300) and your local fire department.
- Notify the National Response Center, if required. Also notify appropriate state and local regulatory agencies, the LEPC and the Coast Guard if the release is into a waterway.

Emergency Action:

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Personal Protection Information section.) Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire.

Spill or Leak Procedure:

Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces. Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large Spills: Dike far ahead of

liquid spill for later disposal.

Notification:

spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties. Also contact the Coast Guard and appropriate state and local regulatory agencies.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

SARA TITLE III INFORMATION:

Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):

Immediate Hazard: X Delayed Hazard: X Fire Hazard: X Pressure Hazard: - Reactivity Hazard: -

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

Store in tightly closed containers in cool, dry, well-ventilated area away from heat, sources of ignition and incompatibles. Use non-sparking tools. Grounding and bonding equipment used during transfer to reduce the possibility of static spark-initiated fire or explosion. Do not siphon this product by mouth. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Remove contaminated clothing and clean before reuse. Shower after work using soap and water.

This product does not meet the sulfur limits for K-1 Kerosine and should not be used in non-flue connected appliances, heaters or wick lamps.

EMPTY CONTAINERS:

Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld or reuse containers unless adequate precautions are taken against these hazards.

TRANSPORTATION REQUIREMENTS

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101):	KEROSENE, COMBUSTIBLE LIQUID, UN 1223
D.O.T. HAZARD CLASS (49 CFR 172.101):	COMBUSTIBLE LIQUID
D.O.T. CODE (49 CFR 172.101):	UN 1223
ALL OF LADING DESCRIPTION (49 CFR 172.202):	KEROSENE, COMBUSTIBLE LIQUID, UN 1223
D.O.T. LABELS REQUIRED (49 CFR 172.101):	NA
D.O.T. PLACARDS REQUIRED (49 CFR 172.504):	COMBUSTIBLE

INGREDIENTS/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REF.
Kerosene	8008-20-6	99.90-100	None established
Remaining components not determined. hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	NA	Trace	NA

REVISION DATE: 30-oct-1991 REPLACES SHEET DATED: 21-aug-1990
 COMPLETED BY: BP OIL HSEQ DEPARTMENT

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

===== Component Information =====

PHOSPHORIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1
STEL (PPM):
STEL (MG/M3): 3
Product %: EQ 85
C.A.S. No.: 7664382

Note:

ACGIH STEL.

WATER

OSHA PEL (PPM): NG
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NG
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 15
C.A.S. No.: NOT GIVEN

===== PRODUCT IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT NAME: PHOSPHORIC ACID

YNONYMS: Ortho-phosphoric acid; white phosphoric acid

FORMULA CAS NO.: 7664-38-2

HAZARDOUS INGREDIENTS: Phosphoric acid 85%, 15% water

SUPERSEDES: 01-01-85

EMERGENCY PHONE NUMBER: 314-539-1600

MANUFACTURER'S NAME AND ADDRESS:

MALLINCKRODT, INC.
SCIENCE PRODUCTS DIVISION
P.O. BOX 800
PARIS, KY 40362

===== PRECAUTIONARY MEASURES =====

DANGER! CAUSES SEVERE BURNS. HARMFUL IF SWALLOWED OR INHALED.

Avoid contact with eyes, skin and clothing.
Keep container closed.
Use with adequate ventilation.
Avoid breathing mist.
Wash thoroughly after handling.

===== EMERGENCY/FIRST AID =====

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. If swallowed, DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give

PORTS MSDS #: 347

PRODUCT: STANDARD, LEAD 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Pb

KEYWORD: STANDARD

PORTS NUMBER: 00190041-100; 00190028-100; 00190041

PORTS MISC INFO:

LAB MSDS# 334

LAB MSDS# 347

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . ~ 212 F

NOTE: ~100'C.

Melting Point. . . . ~ 32 F

NOTE: ~0'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . . NG

Specific Gravity . . . ~ 1

Vapor Pressure . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Vapor Density. . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Percent Volatiles. . . ~ 99

NOTE: @ 21'C.

Evaporation Rate . . . NA

NOTE: NOT APPLI/NOT AVAIL.

pH NA

NOTE: NOT APPLI/NOT AVAIL.

Molecular Weight . . . EQ 207.20

NOTE: FORMULA WT.

Viscosity. NG

Solubility in Water. COMPLETE (100%).

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLI/NOT AVAIL.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

NOTE: NOT APPLI/NOT AVAIL.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Upper (UEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

==== Component Information =====

LEAD

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.15
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.0
C.A.S. No.: 7439921

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTIN I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Lead Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Pb

FORMULA WT.: 207.20

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.

CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5.2 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5.2 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: This product contains a chemical known to the State of California to cause birth defects and other reproductive harm.

EFFECTS OF OVEREXPOSURE:

INHALATION: Severe irritation or burns of respiratory system, headache, nausea, vomiting, dizziness, pulmonary edema, lung inflammation, may be fatal

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, nausea, vomiting, kidney dysfunction

CHRONIC EFFECTS: Damage to lungs, teeth, anemia, kidney damage, blurred vision, lead build-up in the central nervous system

TARGET ORGANS: Eyes, skin, mucous membranes, GI tract, central nervous system, gingival tissue, respiratory system, lungs, kidneys, blood, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease, lung disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting if conscious, give water, milk or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Lead (RQ = 1 LB) and Nitric Acid (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Lead and Nitric Acid

TSCA INVENTORY: -Yes

STATE LISTS:

FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE: WARNING: THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURES: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

PORTS MSDS #: 341

PRODUCT: STANDARD, MERCURY 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Hg

KEYWORD: STANDARD

PORTS NUMBER: 00190035-100

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=300

MANUFACTURER:
VHG LABS INC.
180 ZACHARY RD #5
MANCHESTER
NH

03109

PHONE: PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point.	~ 212 F	NOTE: ~100'C.
Melting Point.	~ 32 F	NOTE: ~0'C.
Freezing Point.	NG	
Pour Point.	NG	
Softening Point.	NG	
Specific Gravity.	~ 1	
Vapor Pressure.	NA	NOTE: NOT APPLI/NOT AVAIL.
Vapor Density.	NA	NOTE: NOT APPLI/NOT AVAIL.
Percent Volatiles.	~ 99	NOTE: @ 21'C.
Evaporation Rate.	NA	NOTE: NOT APPLI/NOT AVAIL.
pH.	NA	NOTE: NOT APPLI/NOT AVAIL.
Molecular Weight.	EQ 200.59	NOTE: FORMULA WT.
Viscosity.	NG	
Solubility in Water. COMPLETE (100%).		
Odor/Appearance/Other Characteristics:		
COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup.	NA	NOTE: NOT APPLI/NOT AVAIL.
Flash Point, Open Cup.	NG	
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLI/NOT AVAIL.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLI/NOT AVAIL.
Upper (UEL).	NA	NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number.	NG
D.O.T. Hazard Class.	NG
Label.	NOT GIVEN
Proper Shipping Name.	CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 1/29/93

===== Component Information =====

MERCURY

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.05
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.05
STEL (PPM): NG
STEL (MG/M3):
Product #: EQ 1.0
C.A.S. No.: 7439976

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM):
STEL (MG/M3): 10
Product #: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

===== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Mercury Plasma Emission Standard - 10,000 g/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Hg

FORMULA WT.: 200.59

CAS NO.: N/A

PRODUCT USE: Laboratory Reagent

REVISION DATE: 01/29/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHQ LABS, INC.
CHEMICAL PRODUCTS AND SERVICES
180 ZACHARY ROAD #5
MANCHESTER, NH 03109

==== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, kidney dysfunction

CHRONIC EFFECTS: None identified

TARGET ORGANS: Respiratory system, eyes, skin, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If conscious, give water, milk, or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Nitric Acid

TSCA INVENTORY: Yes

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common metals

DECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained

breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHJ cannot warn of all of the potential dangers of user or interaction with other chemicals or materials. VHJ warrants that the chemical meets the specifications set forth on the label. VHJ DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

PORTS MSDS #: 107

PRODUCT: METHANOL

PART NUMBER:

FORMULA: CH3OH

KEYWORD: SOLVENT

PORTS NUMBER: 66-001-6038; 66-013-0910; 66-001-6001

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=330

MANUFACTURER:
CURTIN MATHESON SCIENTIFIC, INC
POB 1546, 9999 VETERANS MEM.DR
HOUSTON
TX

77251

PHONE: PHONE:

EMERGENCY PHONE: 314-982-5000

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 148 F	NOTE: 64.5'C.
Melting Point. . . . EQ -144 F	NOTE: -98'C.
Freezing Point . . . NG	
Pour Point NG	
Softening Point. . . NG	
Specific Gravity . . EQ .8	
Vapor Pressure . . . EQ 97	NOTE: MM HG @ 20'C.
Vapor Density. . . . EQ 1.1	
Percent Volatiles. . NG	
Evaporation Rate . . EQ 5.9	NOTE: BU AC = 1.
pH NG	
Molecular Weight . . EQ 32.04	
Viscosity. NG	
Solubility in Water. MISCIBLE WITH WATER.	
Odor/Appearance/Other Characteristics:	
CLEAR, COLORLESS LIQUID, CHARACTERISTIC ODOR.	

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 52 F	NOTE: 11'C.
Flash Point, Open Cup . . . NG	
Fire Point. NG	
Auto Ignition. EQ 725 F	NOTE: 385'C.
Explosive/Flammable Limits	
Lower (LEL). EQ 6.7	
Upper (UEL). EQ 36	

Shipping Regulations

UN/NA Number. NG
D.O.T. Hazard Class. . . FLAMMABLE LIQUID
Label NOT GIVEN
Proper Shipping Name . . NOT GIVEN

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 5/11/92

===== Component Information =====

METHYL ALCOHOL

OSHA PEL (PPM): 200
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 200
ACGIH TLV (MG/M3):
STEL (PPM): 250
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: 67561

Note:

PEL, TLV, OSHA & ACGIH STEL: SKIN.

===== PRODUCT IDENTIFICATION =====

PRODUCT: METHYL ALCOHOL

SYNONYMS: Wood alcohol; methanol; carbinol

FORMULA CAS NO.: 67-56-1

MOLECULAR WEIGHT: 32.04

CHEMICAL FORMULA: CH3OH

HAZARDOUS INGREDIENTS: Methyl alcohol

PRECAUTIONARY MEASURES:

DANGER! MAY BE FATAL IF SWALLOWED.

HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE! MAY CAUSE BLINDNESS. CANNOT BE MADE NONPOISONOUS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATOR TRACT.

Keep away from heat, sparks and flame.
Avoid contact with eyes, skin and clothing.
Avoid breathing vapor.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

EMERGENCY/FIRST AID:

In all cases call a physician immediately. If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes.

SEE HEALTH HAZARD INFORMATION SECTION.

DOT HAZARD CLASS: Flammable Liquid

EMERGENCY PHONE NUMBER: 314-982-5000

MANUFACTURED FOR:

CURTIN MATHESON SCIENTIFIC, INC.
9999 VETERANS MEMORIAL DRIVE
P.O. BOX 1546
HOUSTON, TEXAS 77251

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION INFORMATION =====

FIRE: Flammable.

FLASHPOINT: 11'C (52'F) (CC).

AUTOIGNITION TEMPERATURE: 385'C (725'F).

FLAMMABLE LIMITS IN AIR, % BY VOLUME:

LEL: 6.7

UEL: 36

EXPLOSION: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames.

FIRE EXTINGUISHING MEDIA: Water spray, dry chemical, alcohol foam or carbon dioxide.

SPECIAL INFORMATION: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Vapors can flow along surfaces to distant ignition source and flash back.

NFPA RATINGS:

HEALTH: 1

FLAMMABILITY: 3

REACTIVITY: 0

===== REACTIVITY DATA =====

STABILITY: Stable under ordinary conditions of use and storage.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon oxides and formaldehyde may form when heated to decomposition.

HAZARDOUS POLYMERIZATION: This substance does not polymerize.

INCOMPATIBILITIES: Strong oxidizing agents such as nitrates, perchlorates or sulfuric acid. Will attack some forms of plastics, rubber, and coatings. May react with metallic aluminium and generate hydrogen gas.

===== LEAK/SPILL DISPOSAL INFORMATION =====

Ventilate area of leak or spill. Remove all sources of ignition. Clean-up personnel require protective clothing and respiratory protection from vapors. Contain and recover liquid when possible. Collect as hazardous waste and atomize in a suitable RCRA approved combustion chamber, or absorb with vermiculite, dry sand, earth or similar material for disposal as hazardous waste in a RCRA approved facility. Do not flush to sewer!

REPORTABLE QUANTITY (RQ) (CWA/CERCLA): 5000 lbs.

Ensure compliance with local, state and federal regulations.

===== HEALTH HAZARD INFORMATION =====

EXPOSURE/HEALTH EFFECTS:

INHALATION: A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma, and death. A person may get better but then worse again up to 30 hours later.

INGESTION: Toxic. Symptoms parallel inhalation. Can intoxicate and cause blindness. Usual fatal dose: 100-125 milliliters.

SKIN CONTACT: Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur, symptoms may parallel inhalation exposure.

EYE CONTACT: Irritant. Continued exposure may cause eye lesions.

CHRONIC EXPOSURE: Marked impairment of vision and enlargement of the liver has been reported. Repeated or prolonged exposure may cause skin irritation.

AGGRAVATION OF PRE-EXISTING CONDITIONS: Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

FIRST AID:

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

SKIN EXPOSURE: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

EYE EXPOSURE: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

TOXICITY DATA (RTECS, 1991): ORAL RAT LD50: 5628 mg/kg INHALATION RAT LC50: 64000 ppm/4H SKIN RABBIT: 15800 mg/kg; investigated as tumorigen, mutagen, reproductive effector.

===== OCCUPATIONAL CONTROL MEASURES =====**AIRBORNE EXPOSURE LIMITS:**

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): 200 ppm (TWA), 250 ppm (STEL) skin

ACGIH THRESHOLD LIMIT VALUE (TLV): 200 ppm (TWA), 250 ppm (STEL) skin

VENTILATION SYSTEM: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

PERSONAL RESPIRATORS: (NIOSH APPROVED) If the TLV is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or self-contained breathing apparatus.

SKIN PROTECTION: Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

EYE PROTECTION: Use chemical safety goggles. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and tick-drench facilities in work area.

===== STORAGE AND SPECIAL INFORMATION =====

Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials. Storage and use areas should be No Smoking areas. Spark-proof tools and explosion-proof equipment should be used in the storage and handling areas.

===== ADDENDUM TO MATERIAL SAFETY DATA SHEET =====

THIS ADDENDUM MUST NOT BE DETACHED FROM THE MSDS. IDENTIFIES SARA 313 SUBSTANCE(S). ANY COPYING OR REDISTRIBUTION OF THE MSDS MUST INCLUDE A COPY OF THIS ADDENDUM.

REGULATORY STATUS:

(CHEM.KEY: METOL)

HAZARD CATEGORIES FOR SARA SECTION 311/312 REPORTING:

ACUTE: X
CHRONIC: X
FIRE: X
PRESSURE:
REACTIVE:

PRODUCT OR COMPONENTS OF PRODUCT	SARA EHS SECT. 302 RQ (LBS.)	TPQ (LBS.)	SARA SECTION 313 CHEMICALS NAME LIST	CHEMICAL CATEGORY
METHYL ALCOHOL (67-56-1)	No	No	Yes	No
		CERCLA SEC. 103 RQ (lbs.)	RCRA SEC. 261.33	
METHYL ALCOHOL (67-56-1)		5000	U154	

SARA SECTION 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA SECTION 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA SECTION 313 CHEMICALS: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA SEC. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4.

RCRA: Resource Conservation and Recovery Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33.

===== SPECIAL NOTES =====

CMS provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its

appropriateness for a particular purpose.

CMS makes no representation, or warranties, either express or implied, of merchantability, fitness for particular purpose with respect to the information set forth herein or to the product to which the information refers. Accordingly, CMS will not be responsible for damages resulting from use of or reliance upon this information.

CHEMPURE(TM) Brand

EFFECTIVE DATE: 05-11-86

SUPERSEDES: 04-06-89

PORTS MSDS #: 5370

PRODUCT: METHYL ETHYL KETONE

PART NUMBER:

FORMULA: C-H3-C-H2-C-O-C-H3

KEYWORD: SOLVENT

PORTS NUMBER: 03-413-2130

PORTS MISC INFO:

01-13-2130

PORTS RATING: HFR=330

MANUFACTURER:

FISHER SCIENTIFIC CO.

1 REAGENT LANE, P.O. BOX 375

FAIR LAWN

NJ

07410

PHONE: PHONE: 201-796-7100

EMERGENCY PHONE: 201-796-7100

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 176 F

NOTE: 80'C.

Melting Point. . . . EQ -123 F

NOTE: -86'C.

Freezing Point. . . . NG

Pour Point. NG

Softening Point. . . NG

Specific Gravity . . EQ .8054

Vapor Pressure . . . EQ 100

NOTE: MMHG @ 25'C.

Vapor Density. . . . EQ 2.5

Percent Volatiles. . NG

Evaporation Rate . . EQ 2.7

NOTE: ETHER = 1.

pH NG

Molecular Weight . . EQ 72.12

Viscosity. EQ .40

NOTE: CP @ 25'C.

Solubility in Water. 27.5% / SOLUBLE IN ALCOHOL, ETHER, BENZENE, ACETONE, OILS.

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID WITH AN ACETONE-LIKE ODOR / ODOR THRESHOLD: 10 PPM.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 16 F

NOTE: -9'C.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. EQ 759 F

NOTE: 404'C.

Explosive/Flammable Limits

Lower (LEL). EQ 1.4

NOTE: @ 200'F.

Upper (UEL). EQ 11.4

NOTE: @ 200'F.

Shipping Regulations

UN/NA Number. UN1193

D.O.T. Hazard Class. . . 3 FLAMMABLE LIQUID

Label FLAMMABLE LIQUID

Proper Shipping Name . . METHYL ETHYL KETONE

Preparer/Contact Information: AUTHORIZED-FISHER SCIENTIFIC INC.

Date Prepared/Revised 11/16/94

===== Component Information =====

METHYL ETHYL KETONE

OSHA PEL (PPM):
OSHA PEL (MG/M3): 590
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 590
STEL (PPM):
STEL (MG/M3): 885
Product #: EQ 100
C.A.S. No.: 78933

Note:

OSHA & ACGIH STEL: 300 PPM / PEL & TLV: 200 PPM / NIOSH:590 MG/M3, 200 PPM.

===== SUBSTANCE IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

SUBSTANCE: METHYL ETHYL KETONE

CAS-NUMBER: 78-93-3

TRADE NAMES/SYNONYMS: BUTANONE; 2-BUTANONE; ETHYL METHYL KETONE; METHYL ACETONE; 3-BUTANONE; MEK; RCRA U159; STCC 4909243; UN 1193; M209; M208; C4H8O; ACC14460

CHEMICAL FAMILY: Ketone, aliphatic

INDEX: 12922830071

AT NO: M209500

DATE: 1/17/95

CERCLA RATINGS (SCALE 0-3): HEALTH=3; FIRE=3; REACTIVITY=0; PERSISTENCE=0

NFPA RATINGS (SCALE 0-4): HEALTH=1; FIRE=3; REACTIVITY=0

EMERGENCY NUMBER: (201) 796-7100

CHEMTREC ASSISTANCE: (800) 424-9300

MANUFACTURER'S NAME AND ADDRESS:

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN, NJ 07410
(201) 796-7100

===== COMPONENTS AND CONTAMINANTS =====

SEE COMPONENT INFORMATION.

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

METHYL ETHYL KETONE:

300 ppm (885 mg/m3) NIOSH recommended STEL.
200 ppm (590 mg/m3) DFG MAK TWA;
400 ppm (1180 mg/m3) DFG MAK 30 minute peak, average value, 4
times/shift.

MEASUREMENT METHOD: Ambersorb (R) xe-347 tube; carbon disulfide; gas chromatography with flame ionization detection; (NIOSH Vol. III # 2500).

5000 pounds CERCLA Section 103 Reportable Quantity subject to SARA Section 313 Annual Toxic Chemical Release Reporting.

OSHA revoked the final rule limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910. 1000 (58 FR 35338).

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

FIRE AND EXPLOSION HAZARD: Dangerous fire hazard when exposed to heat or flame.

Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back.

Vapor-air mixtures are explosive above flash point.

FLAMMABILITY CLASS (OSHA): IB

FIREFIGHTING MEDIA: Dry chemical, carbon dioxide, water spray or alcohol-resistant foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or alcohol-resistant foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

Alcohol foam (NFPA 325M, Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, 1991).

FIREFIGHTING: Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire. Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 26).

Extinguish only if flow can be stopped; use water in flooding amounts as fog, solid streams may not be effective. Cool containers with flooding quantities of water. Apply from as far a distance as possible. Avoid breathing vapors, keep upwind.

Water may be ineffective (NFPA 325M, Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, 1991).

===== TRANSPORTATION DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101: Methyl Ethyl Ketone - UN 1193

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101: 3 - Flammable liquid

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101: PG II

S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND
PART E: Flammable liquid

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:

EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:

PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

===== TOXICITY =====

METHYL ETHYL KETONE:

IRRITATION DATA: 500 mg/24 hours skin-rabbit moderate; 402 mg/24 hours
skin-rabbit mild; 13,780 ug/24 hours open skin-rabbit mild; 350 ppm
eye-human; 80 mg eye-rabbit.

TOXICITY DATA: 100 ppm/5 minutes inhalation-human TCLO; 23,500 mg/m³/8
hours inhalation-rat LC50; 40 gm/m³/2 hours inhalation-mouse LC50; 38 gm/m³
inhalation-mammal LC50; 6480 mg/kg skin-rabbit LD50; 2737 mg/kg oral-rat
LD50; 4050 mg/kg oral-mouse LD50; 607 mg/kg intraperitoneal-rat LD50; 616
mg/kg intraperitoneal-mouse LD50; 2000 mg/kg intraperitoneal-guinea pig
LDLo; 5000 ppm/6 hour/90 day intermittent inhalation-rat TCLO; mutagenic
data (RTECS); reproductive effects data (RTECS).

CARCINOGEN STATUS: None.

LOCAL EFFECTS: Irritant - inhalation, skin and eyes.

ACUTE TOXICITY LEVEL: Moderately toxic by ingestion; slightly toxic by
inhalation and dermal absorption.

TARGET EFFECTS: Central nervous system depressant.

AT INCREASED RISK FROM EXPOSURE: Persons with a history of chronic skin or
respiratory disease, or peripheral neuropathy.

ADDITIONAL DATA: May enhance the neurotoxic effects of n-hexane or
methyl n-butyl ketone, and predispose the liver to injury from hepatotoxins
including carbon tetrachloride and chloroform, and potentiate the
nephrotoxicity of chloroform. Interactions with alcohol may occur.
One study shows an increased risk of leukemia for children whose fathers had
occupational exposure to methyl ethyl ketone after the birth of the child.

===== HEALTH EFFECTS AND FIRST AID =====

INHALATION:

METHYL ETHYL KETONE: Irritant/narcotic. 3000 ppm Immediately Dangerous to
Life or Health.

ACUTE EXPOSURE: Vapor concentrations of 100-200 ppm caused mild nose and
throat irritation; 90-270 ppm/4 hours caused shortened time estimations in
men and increased the variation of time estimation tests in women; 300-500
ppm was objectionable and caused throat irritation, headache, vomiting, and
nausea; 3,300 ppm was moderately irritating; and momentary exposure to
10,000 ppm produced intolerable irritation of the nose. Other effects may
include difficulty in breathing, coughing and shortness of breath, and
central nervous system depression with dizziness, drowsiness, weakness, loss
of consciousness, and possibly death. One case of retrobulbar neuritis has

been reported in a worker exposed for 1 1/2 hours. Headache, mild vertigo and diminished vision were noted. Two other men had a similar exposure, but reported only mild respiratory symptoms and conjunctival irritation. It was suggested the optic nerve toxicity may have been related to the metabolism to methanol. Guinea pigs exposed to 10,000 ppm developed irritation rapidly, and narcosis developed after 240-280 minutes; at 33,000 ppm these symptoms developed sooner and caused death in 200-260 minutes; at 100,000 ppm narcosis and death occurred within 45-55 minutes. The animals that died exhibited emphysema, slight congestion of the brain and marked congestion of systemic organs, especially the lungs.

CHRONIC EXPOSURE: Offspring of pregnant rats exposed to 1,000 or 3,000 ppm exhibited skeletal, soft tissue, and sternebral variations. The same investigators repeated the study and the 3,000 ppm dose produced slight maternal and fetal toxicity. However, no embryo toxicity or teratogenicity were seen. Occupational exposure to methyl ethyl ketone and acetone has produced unconsciousness and convulsions; methyl ethyl ketone and a jelly-like substance produced weakness and numbness in the legs; and methyl ethyl ketone and tetrahydrofuran produced loss of muscle strength, fatigue, and bilateral paresthesia. Methyl ethyl ketone may have potentiated the neurotoxic effects of n-hexane in glue-sniffers and methyl n-butyl in workers.

FIRST AID: Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportably. Get medical attention immediately.

SKIN CONTACT:

METHYL ETHYL KETONE: Irritant.

ACUTE EXPOSURE: Contact with liquid or concentrated vapors may cause dermatitis. Direct contact with the liquid may cause extreme thickening of the fingernails, with permanent destruction of the nail beds. Skin sensitization did not occur when tested in man. Application of a lethal dose to rabbit skin produced erythema, edema, and necrosis. Liver and intestinal congestion were also reported.

CHRONIC EXPOSURE: Repeated or prolonged exposure may cause defatting of the skin producing a dry, scaly, fissured dermatitis. Skin absorption may have contributed to the toxic effects detailed in chronic inhalation of workers exposed to methyl ethyl ketone and other substances.

FIRST AID: remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

EYE CONTACT:

METHYL ETHYL KETONE: Irritant.

ACUTE EXPOSURE: Exposure to vapor concentrations of 200 ppm caused irritation; 3,300 ppm produced moderate irritation; and 10,000 ppm was almost intolerable to guinea pigs. One case of severe anterior uveitis has been reported from the liquid, but may have been triggered by trauma. Direct contact of the liquid caused painful irritation and temporary corneal injury in rabbits, graded 5 on scale of 1-10. In guinea pigs, 100,000 ppm caused temporary corneal opacity which cleared within 8 days.

CHRONIC EXPOSURE: Repeated or prolonged exposure to irritants may cause conjunctivitis.

FIRST AID: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION:

METHYL ETHYL KETONE: NARCOTIC.

ACUTE EXPOSURE: Ingestion has caused coma, hyperventilation, metabolic acidosis and tachycardia. Other effects may include gastrointestinal irritation with abdominal spasms, nausea, vomiting, headache, and dizziness. Administration of lethal doses to animals produced congested and hemorrhagic lungs and congestion of the liver, alimentary tract, and peritoneal wall. Aspiration of ketones may result in chemical pneumonitis.

CHRONIC EXPOSURE: Repeated administration of methyl ethyl ketone and ethyl n-butyl ketone produced clinical neuropathy in animals.

FIRST AID: If the person is conscious and not convulsing, induce emesis by giving syrup of ipecac followed by water. (If vomiting occurs keep the head below the hips to prevent aspiration). Repeat in 20 minutes if not effective initially. Give activated charcoal. In patients with depressed respiration or if emesis is not produced, perform gastric lavage cautiously (Dreisbach, Handbook of Poisoning, 12th Ed.). Treat symptomatically and supportably. Gastric lavage should be performed by qualified medical personnel. Get medical attention immediately.

ANTIDOTE: No specific antidote. Treat symptomatically and supportably.

===== REACTIVITY =====

REACTIVITY: Stable under normal temperatures and pressures.

INCOMPATIBILITIES:

METHYL ETHYL KETONE:

CHLOROFORM: Vigorous, exothermic reaction in the presence of a base.

CHLOROSULFONIC ACID: Mixing in closed containers may result in increased temperature and pressure.

EXPLOSIVES: May react.

HYDROGEN PEROXIDE, NITRIC ACID: Produces shock and heat sensitive oily peroxide.

ISOPROPANOL: Two explosions occurred during laboratory distillation of isopropanol, one with a sample stored for 4 years. No cause was apparent, but the presence of traces of ketone(s) promoting peroxidation is a possibility.

OLEUM: mixing in closed container may result in increased temperature and pressure.

OXIDIZERS (STRONG): Possible fire and explosion hazard.

PEROXIDES: May react.

PLASTICS: May be attacked.

POTASSIUM TERT-BUTOXIDE: Ignition reaction.

RADIOACTIVE MATERIALS: May react.

RESINS: May be attacked.

RUBBER: May be attacked.

DECOMPOSITION: Thermal decomposition products may include toxic oxides of carbon.

POLYMERIZATION: Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

===== STORAGE AND DISPOSAL =====

Observe all federal, state and local regulations when storing or disposing this substance.

STORAGE: Store in accordance with 29 CFR 1910.106.

BONDING AND GROUNDING: Substances with low electroconductivity, which may be ignited by electrostatic sparks, should be stored in containers which meet the bonding and grounding guidelines specified in NFPA 77-1983, Recommended Practice on Static Electricity.

Store away from incompatible substances.

DISPOSAL: Disposal must be in accordance with standards applicable to generators of hazardous waste, 40 CFR 262. EPA hazardous waste number U159.

METHYL ETHYL KETONE:

REGULATORY LEVEL: 200.0 mg/l (TCLP-40 CFR 261 Appendix II).

Materials which contain the above substance at or above the TCLP regulatory level meet the EPA toxicity characteristic, and must be disposed of in accordance with 40 CFR 262. EPA Hazardous Waste Number D035.

CONDITIONS TO AVOID: Avoid contact with heat, sparks, flames, or other sources of ignition. Vapors may be explosive and poisonous; do not allow unnecessary personnel in area. Do not overheat containers; containers may violently rupture and travel a considerable distance in heat of fire.

===== SPILL AND LEAK PROCEDURES =====

SOIL SPILL: Dig holding area such as lagoon, pond or pit for containment.

Absorb bulk liquid with fly ash, cement powder, sawdust, or commercial sorbents.

AIR SUPPLY: Apply water spray to knock down vapors.

WATER SPILL: Limit spill motion and dispersion with natural barriers or oil spill control booms.

Use suction hoses to remove trapped soil material.

OCCUPATIONAL SPILL: Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces.

For small spills, take up with sand or other noncombustible absorbent material and place in containers for later disposal.

For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.

REPORTABLE QUANTITY (RQ): 5000 pounds

The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

===== PROTECTIVE EQUIPMENT =====

VENTILATION: Provide local exhaust or general dilution ventilation to meet published exposure limits. Ventilation equipment must be explosion-proof if explosion concentrations of dust, vapor or fume are present.

RESPIRATOR: The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of Labor, 29 CFR 1910 Subpart Z.

The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

METHYL ETHYL KETONE:

1000 PPM:

Any powered air-purifying respirator with organic vapor cartridge(s).
Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

3000 PPM:

Any air-purifying, full facepiece respirator (gas mask) with a chin-style or front- or back-mounted organic vapor canister.
Any supplied-air respirator operated in continuous flow mode.
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.

ESCAPE:

Any air-purifying, full facepiece respirator (gas mask) with a chin-style or front- or back-mounted organic vapor canister.
Any appropriate escape-type self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES: Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION: Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

EMERGENCY EYE WASH: Where there is any possibility that an employee's eyes may be exposed to this substance, the employee should provide an eye wash fountain within the immediate work area for emergency use.

===== SPECIAL NOTES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

AUTHORIZED - FISHER SCIENTIFIC, INC.

CREATION DATE: 09/28/84

ADDITIONAL INFORMATION: THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

STARTEX CHEMICAL --~~METHYL ISOBUTYL KETONE~~ - METHYL ISOBUTYL KETONE
MATERIAL SAFETY DATA SHEET
NSN: 6810002812761
Manufacturer's CAGE: START
Part No. Indicator: A
Part Number/Trade Name: METHYL ISOBUTYL KETONE

General Information

Item Name: METHYL ISOBUTYL KETONE
Company's Name: STARTEX CHEMICAL
Company's P. O. Box: 687
Company's City: CONROE
Company's State: TX
Company's Country: US
Company's Zip Code: 77305
Company's Emerg Ph #: 409-539-6244
Company's Info Ph #: 409-539-6244
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 009
Status: SE
Date MSDS Prepared: 17NOV92
Safety Data Review Date: 17NOV92
Supply Item Manager: CX
MSDS Preparer's Name: DGSC-SSH
Preparer's Company: DEFENSE GENERAL SUPPLY CENTER
Preparer's St Or P. O. Box: 8000 JEFFERSON DAVIS HIGHWAY
Preparer's City: RICHMOND
Preparer's State: VA
Preparer's Zip Code: 23297-5680
MSDS Serial Number: BPJBD
Specification Number: TT-M-268
Hazard Characteristic Code: F4
Unit Of Issue: DR
Unit Of Issue Container Qty: 55 GALLONS
Type Of Container: DRUM
Net Unit Weight: 366.4 LBS

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHYL ISOBUTYL KETONE (SARA III)
Ingredient Sequence Number: 01
Percent: 100 %
NIOSH (RTECS) Number: SA9275000
CAS Number: 108-10-1

CAS# 108-10-1
MSDS BPJBD
Methyl Ethyl Ketone

OSHA PEL: 100 PPM/75 STEL
ACGIH TLV: 50 PPM/75 STEL; 9293
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR COLORLESS LIQUID, ACETONE-LIKE ODOR.
Boiling Point: 244F,118C
Melting Point: -112F,-80C
Vapor Pressure (MM Hg/70 F): 16
Vapor Density (Air=1): 3.45
Specific Gravity: 0.803
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: 1.62 (BUTYL ACETATE=1)
Solubility In Water: INSOLUBLE
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Flash Point: 73F,23C
Flash Point Method: CC
Lower Explosive Limit: 1.4 %
Upper Explosive Limit: 7.5 %
Extinguishing Media: USE CARBON DIOXIDE, FOAM, OR DRY CHEMICALS FOR SMALL FIRES. USE ALCOHOL-TYPE OR ALL-PURPOSE-TYPE FOAMS FOR LARGE FIRES.
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO COOL NEARBY CONTAINERS EXPOSED TO FIRE.
Unusual Fire And Expl Hazrds: FIRE OR EXCESSIVE HEAT MAY CAUSE PRODUCTION OF HAZARDOUS DECOMPOSITION PRODUCTS. USE WATER SPRAY TO DISPERSE VAPORS; REIGNITION IS POSSIBLE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, AND OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS (SUCH AS NITRIC ACID & HCLO), A;DEHYDES AND ALKALIES. VIOLENT REACTION WITH POTASSIUM T-BUTOXIDE
Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE. WILL NOT OCCUR.

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS 2080 MG/KG
Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE-EYE:SEVERE IRRITATION. SKIN:REPEATED CONTACT MAY CAUSE DEFATING/IRRITATION.INHALATION:IRRITATIONG & ITCHING SENSATION OF RESPIRATORY TRACT,NAUSEA/VOMITING,DIZZINESS/UNCONSCIOUSNESS. INGESTION:NAUSEA,HEADACHE,INFLAMATION OF GI-TRACT,LARGE DOSES MAY PRODUCE NARCOSIS. CHRONIC-SKIN:IRRITATION MAY RESULT IN DERMATITIS
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity -.OSHA: NO
Explanatoin Carcinogenicity: PRODUCT CONTAINS NO INGREDIENTS CURRENTLY CLASSIFIED AS CARCINOGENIC BY NTP, IARC OR OSHA.
Signs/Symptoms Of Overexp: EYE:IRRITATION, REDNESS/SWELLING OF CONJUCTIVA AND PAIN. SKIN & RESPIRATORY TRACT IRRITATION, COUGHING, VOMITING, HEADACHE,DIZZINESS, LATHARGY AND UNCONSCIOUSNESS.
Med Cond Aggravated By Exp: PERSONS WITH A HISTORY OF AILMENTS OR WITH A PRE-EXISTING DISEASE INVOLVING THE EYES, SKIN, OR RESPIRATORY TRACT MAY BE AT INCREASED RISK FROM EXPOSURE.
Emergency/First Aid Proc: INHALATION:REMOVE TO FRESH AIR. RESUSCITATE IF NOT BREATHING. GET MEDICAL ATTENTION. EYES:IMMEDIATELY FLUSH WITH PLENTY OF REMOVE CONTAMINATED CLOTHING. WASH WITH SOAP AND WATER. IF IRRITATION PERSISTS, GET MEDICAL ADVICE. INGESTION:GIVE TWO GLASSES OF WATER. DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION.

=====

Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: SMALL SPILL: WIPE/SOAK UP WITH PAPER TOWEL OR INERT ABSORBENT. PUT IN DISPOSAL CONTAINER. REMOVE RESIDUE WITH WATER. LARGE SPILL: EVACUATE AND VENTILATE AREA. IF POSSIBLE, STOP LEAK. DIKE TO RETAIN RUN OFF. VACUUM UP FREE LIQUID. ABSORB/WASH RESIDUE
Neutralizing Agent: NONE
Waste Disposal Method: INCINERATE IN A FURNACE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
Precautions-Handling/Storing: STORE IN A COOL, DRY, WELL VENTILATED AREA. KEEP CONTAINERS TIGHTLY CLOSED. PROTECT CONTAINERS FROM PHYSICAL DAMAGE & STATIC ELECTRICITY.
Other Precautions: DO NOT TAKE INTERNALLY. DO NOT BREATHE VAPORS. AVOID CONTACT WITH EYES. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. DO NOT USE WITH COPPER/COPPER ALLOYS, PLASTICS INCLUDING POLYVINYL CHLORIDE/POLYETHYLENE.

=====

Control Measures

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Respiratory Protection: IF VENTILATION DOES NOT MAINTAIN INHALATION EXPOSURES BELOW PEL(TLV), USE NIOSH/MSHA APPROVED ORGANIC VAPOR CARTRIDGE AND DUST/MIST PRE-FILTER RESPIRATORS AS PER CURRENT 29 CFR 1910.134,

INSTRUCTIONS/WARNINGS AND NIOSH-RESPIRATOR SELECTION.
Ventilation: MECHANICAL (GENERAL) ROOM VENTILATION IS NORMALLY ADEQUATE.
LOCAL EXHAUST MAY BE REQUIRED IF WORK AREA NOT VENTED.
Protective Gloves: NEOPRENE, NITRILE, PVC OR NATURAL RUBBER
Eye Protection: SAFETY GOGGLES WITH OPTIONAL FACE SHIELD
Other Protective Equipment: EYE WASH STATION AND SAFETY SHOWER.
INDUSTRIAL-TYPE WORK CLOTHING AND APRON AS REQUIRED.
Work Hygienic Practices: OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND
RECOMMENDED PROCEDURES. DO NOT WEAR CONTAMINATED CLOTHING OR FOOTWEAR.
Suppl. Safety & Health Data: AVOID PROLONGED OR REPEATED EXPOSURE. DO NOT
GET ON SKIN OR IN EYES. DO NOT BREATHE VAPORS OR MISTS.

=====
Transportation Data
=====

Trans Data Review Date: 92351
DOT PSN Code: ABF
DOT Proper Shipping Name: ACETONE
DOT Class: 3
DOT ID Number: UN1090
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: ADF
IMO Proper Shipping Name: ACETONE
IMO Regulations Page Number: 3102
IMO UN Number: 1090
IMO UN Class: 3.1
IMO Subsidiary Risk Label: -
IATA PSN Code: ACM
IATA UN ID Number: 1090
IATA Proper Shipping Name: ACETONE
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: ACM
AFI Prop. Shipping Name: ACETONE
AFI Class: 3
AFI ID Number: UN1090
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7
=====

Disposal Data
=====

Label Data
=====

Label Required: YES

Technical Review Date: 17NOV92
Label Status: F
Common Name: METHYL ISOBUTYL KETONE
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: EXTREMELY FLAMMABLE LIQUID AND VAPORS. VAPORS
MAY SPREAD LONG DISTANCES AND IGNITE. KEEP AWAY FROM HEAT, SPARKS, AND
FLAME. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. IN CASE OF
FIRE, USE DRY CHEMICAL, CO2 OR ALCOHOL FOAM. ACUTE-EYE:SEVERE IRRITATION.
SKIN:REPEATED CONTACT MAY CAUSE DEFATING/IRRITATION.INHALATION:IRRITATION/
STINGING & ITCHING SENSATION OF RESPIRATORY TRACT,NAUSEA/VOMITING,
DIZZINESS/UNCONSCIOUSNESS.INGESTION:NAUSEA,VOMITING,HEADACHE,DIZZINESS AND
UNCNsciousNESS. CHRONIC-SKIN:IRRITATION/ALLERGIC REACTION. SPILL: EVACUATE
AREA. REMOVE IGNITION SOURCES. ABSORB WITH INERT MATERIAL/WASH RESIDUE WITH
WATER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: STARTEX CHEMICAL
Label P.O. Box: 687
Label City: CONROE
Label State: TX
Label Zip Code: 77305
Label Country: US
Label Emergency Number: 409-539-6244

=====

URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 129

PRODUCT: METHYLENE CHLORIDE

PART NUMBER:

FORMULA: CHCl2

KEYWORD: CARCINOGEN

PORTS NUMBER: 66-001-6112; 66-001-6113; 66-001-6116; 66072203; 66-007-2203; 66-01

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=311

MANUFACTURER:
FISHER SCIENTIFICPHONE: PHONE:
EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 104 F
Melting Point. . . . EQ -142 F
Freezing Point . . . EQ -142 F
Pour Point NG
Softening Point. . . NG

Specific Gravity . . EQ 1.33
Vapor Pressure . . . EQ 350
Vapor Density. . . . EQ 2.9

NOTE: DENSITY.
NOTE: MMHG @ 20'C.

Percent Volatiles. . NG
Evaporation Rate . . NA
pH NA
Molecular Weight . . EQ 83.913

NOTE: NOT AVAILABLE.
NOTE: NOT AVAILABLE.

Viscosity. NA
Solubility in Water. MODERATELY SOLUBLE IN WATER.

NOTE: NOT AVAILABLE.

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ETHEREAL ODOR / DECOMPOSITION TEMPERATURE: NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA
Flash Point, Open Cup . . . NA
Fire Point. NG
Auto Ignition. EQ 1033 F
Explosive/Flammable Limits
Lower (LEL). EQ 15.1
Upper (UEL). EQ 17.3

NOTE: NOT APPLICABLE.
NOTE: NOT APPLICABLE.
NOTE: 556.11'C.

NOTE: @ 103'C.
NOTE: @ 148'C.

Shipping Regulations

UN/NA Number. . . . UN1593
D.O.T. Hazard Class. . . 6.1
Label NOT GIVEN
Proper Shipping Name . . DICHLOROMETHANE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 1/11/95

==== Component Information =====

METHYLENE, DICHLORO-
OSHA PEL (PPM): 500
OSHA PEL (MG/M3):
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 174
STEL (PPM): 2000
STEL (MG/M3):
Product #: EQ 100
C.A.S. No.: 75092

Note:

PEL (FINAL & VACATED): 1000 PPM, CEIL / TLV: 50 PPM / OSHA STEL: 5MIN IN 3HRS.

==== SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

PRODUCT: Dichloromethane

14930

MSDS NAME: Dichloromethane

CATALOG NUMBERS: BP1186 4, BP1186-4, BP11864 001, BP1186SS 115, BP1186SS 200, BP1186SS 30, BP1186SS 50, D123-1, D142 4, D142-4, D143 1, D143 4, D143-1, D143-4, D143SK 1, D143SK 4, D143SK-1, D143SK-4, D143SS-11, D143SS-115, D143SS-20, D143SS-200, D143SS-30, D143SS-50, D150 1, D150 4, D150-1, D150-4, D150SK 1, D150SK 4, D150SK-1, D150SK-4, D150SS 200, D150SS 30, D150SS 50, D150SS-11, D150SS-115, D150SS-20, D150SS-200, D150SS-30, D150SS-50, D151 1, D151 4, D151-1, D151-4, D152-4 D154 4, D1544LOT009, D35 1, D35 4, D35-1, D35-4, D37 1, D37 20, D37 200, D37 200 001, D37 200 002, D37 4, D37 500, D37-1, D37-20 D37-200, D37-4, D37-500, D37SK 4, D37SK-4, D37SS 115, D37SS-115, D37SS-200, D37SS-30, D37SS-50, S71971, S719971-1, S80084, S80084-1, S80084-1MF*, S80084MF*

SYNONYMS: Methylene chloride, methylene dichloride, freon30

CAT NO: D1424

DATE: 01/19/96

FOR INFORMATION, CALL: 201-796-7100

EMERGENCY NUMBER: 201-796-7100

FOR CHEMTREC ASSISTANCE, CALL: 800-424-9300

COMPANY IDENTIFICATION:

FISHER SCIENTIFIC
1 REAGENT LANE
FAIR LAWN, NJ 07410

==== SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

CHEMICAL NAME	EINECS#
Methane, dichloro-	200-838-9

==== SECTION 3 - HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW:

APPEARANCE: Colorless liquid with a ethereal odor. Caution! Vapors cause

eye and skin irritation. Contact with liquid causes severe eye and skin irritation and possible burns. May be absorbed through the skin. Inhalation and ingestion may cause respiratory and digestive tract irritation, central nervous system depression characterized by headache, nausea, vomiting, dizziness, and drowsiness. May cause cancer based on animal data. Vapors mixed with air in proper proportion will propagate a flame. Reproductive/development effects have been reported in animals.

TARGET ORGANS: Central nervous system, liver, lungs, pancreas.

POTENTIAL HEALTH EFFECTS:

EYES: Contact with eyes may cause severe irritation, and possible eye burns.

SKIN: Exposure may cause irritation and possible burns. May be absorbed through the skin. Causes a burning sensation on contact with the skin.

INGESTION: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advances stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

INHALATION: Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Methylene chloride is metabolized to carbon monoxide. Overexposure may cause an increase in carboxyhemoglobin levels in blood. Persons with a compromised cardiovascular system may not be able to tolerate the added cardiovascular stress.

CHRONIC: Prolonged or repeated skin contact may cause dermatitis. Possible cancer hazard based on tests with laboratory animals. Lung, liver and pancreatic tumors have been associated with chronic exposure to methylene chloride. Animals studies with rats and mice have shown delayed ossification of sternobrae and an increased incidence of extra sternobrae when exposed by inhalation.

===== SECTION 4 - FIRST AID MEASURES =====

EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

SKIN: Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

INGESTION: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

INHALATION: Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

None reported.

===== SECTION 5 - FIRE FIGHTING MEASURES =====

GENERAL INFORMATION: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Vapors mixed with air in proper proportion will propagate a flame.

EXTINGUISHING MEDIA: For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.

Use water spray to cool fire-exposed containers.

IGNITION TEMPERATURE: 1033 F (556.11 C)

FLASH POINT: Not applicable.

EXPLOSION LIMITS:

LOWER: 15.1 @ 103 C

UPPER: 17.3 @ 148 C

===== SECTION 6 - ACCIDENTAL RELEASE MEASURES =====

GENERAL INFORMATION: Use proper personal protective equipment as indicated in Section 8.

SPILLS/LEAKS: Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. Use a spark-proof tool.

===== SECTION 7 - HANDLING AND STORAGE =====

HANDLING:

Wash thoroughly after handling.
Remove contaminated clothing and wash before reuse.
Use with adequate ventilation.
Loosen closure cautiously before opening.
Do not get on skin and clothing.
Keep container tightly closed.
Avoid contact with heat, sparks and flame.
Do not ingest or inhale.

STORAGE:

Keep away from heat, sparks, and flame.
Store in a tightly closed container.
Keep from contact with oxidizing materials.
Store in a cool, dry, well-ventilated area away from incompatible substances.

===== SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION =====

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product.

EXPOSURE LIMITS:

CHEMICAL NAME	ACGIH	NIOSH	OSHA - FINAL PELS
Methane, dichloro-	50 ppm; 174 mg/m3	Reduce exposure to lowest feasible concentration	500 ppm TWA; C 1000 ppm

OSHA VACATED PELS:

METHANE, DICHLORO-: 500 ppm TWA; 2000 ppm STEL (5 min in any 3 hrs); C 1000 ppm

PERSONAL PROTECTIVE EQUIPMENT:

EYES: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

SKIN: Wear appropriate protective gloves to prevent skin exposure.

CLOTHING: Wear appropriate protective clothing to prevent skin exposure.

RESPIRATORS: Follow the OSHA respirator regulations found in 29 CFR 1010.134. Always use a NIOSH-approved respirator when necessary.

===== SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

MOLECULAR FORMULA: CHCl2

===== SECTION 10 - STABILITY AND REACTIVITY =====

CHEMICAL STABILITY: Stable.

CONDITIONS TO AVOID: Incompatible materials, ignition sources, excess heat, strong oxidants.

INCOMPATIBILITIES WITH OTHER MATERIALS: Incompatible with strong oxidizers. Can react dangerously with nitrogen tetroxide, liquid oxygen, potassium, sodium, sodium-potassium alloys, lithium, potassium hydroxide with N-methyl-N-nitroso urea, potassium t-butoxide, and finely powdered aluminum and magnesium.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide.

HAZARDOUS POLYMERIZATION: Has not been reported.

===== SECTION 11 - TOXICOLOGICAL INFORMATION =====

RTECS#:

CAS # 75-09-2: PA8050000

LD50/LC50:

CAS# 75-09-2:

INHALATION, MOUSE: LC50 = 14400 ppm/7H;
INHALATION, RAT: LC50 = 88 gm/m3/30M;
ORAL, RAT: LD50 = 1600 mg/kg.

CARCINOGENICITY:

METHANE, DICHLORO-:

ACGIH: A2-suspected human carcinogen
CALIFORNIA: Carcinogen
NIOSH: Occupational carcinogen
NTP: Suspect carcinogen
OSHA: Possible Select carcinogen
IARC: Group 2B carcinogen

EPIDEMIOLOGY: An historical cohort study of persons occupationally exposed to methylene chloride revealed no significantly increased cancer or ischemic heart disease mortality compared to a group of nonexposed employees as well as general population controls. The most recent update and expansion of this study demonstrated no unusual mortality patterns for hypothesized causes of death and no evidence of a dose-response relationship with respect to career exposure and latency. See IARC volume 41 for a more detailed discussion.

TERATOGENICITY: Specific developmental abnormalities

(musculoskeletal/urogenital): inl-mus TCLO: 1250 ppm/tH

REPRODUCTIVE EFFECTS: No data available.

NEUROTOXICITY: No data available.

MUTAGENICITY: No data available.

OTHER STUDIES: No data available.

===== SECTION 12 - ECOLOGICAL INFORMATION =====

ECOTOXICITY: This chemical has a moderate potential to affect some aquatic organisms. It is resistant to biodegradation, and has a low potential to persist in the aquatic environment. 96-hr. EC50 (loss of equilibrium); Fathead minnow: 99 mg/L; 96-hr. EC10: 66.3 mg/L. Bluegill sunfish: 96-hr. LC50=220 mg/L; Water flea: 24-hr. LC50=2270 mg/L; No observed effect level: 1550 mg/L.

ENVIRONMENTAL FATE: This material is not likely to bioconcentrate.

PHYSICAL/CHEMICAL: Not available.

===== SECTION 13 - DISPOSAL CONSIDERATIONS =====

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-SERIES MAXIMUM CONCENTRATION OF CONTAMINANTS: Not listed.

RCRA D-SERIES CHRONIC TOXICITY REFERENCE LEVELS: Not listed.

RCRA F-SERIES: Not listed.

RCRA P-SERIES: Not listed.

RCRA U-SERIES: Waste number U080

This material is banned from land disposal according to RCRA.

===== SECTION 14 - TRANSPORT INFORMATION =====

US DOT:

SHIPPING NAME: DICHLOROMETHANE

HAZARD CLASS: 6.1

UN NUMBER: UN1593

PACKING GROUP: III

IMO:

SHIPPING NAME: DICHLOROMETHANE

HAZARD CLASS: 6.1

UN NUMBER: 1593

PACKING GROUP: 3

IATA:

SHIPPING NAME: DICHLOROMETHANE

HAZARD CLASS: 6.1

UN NUMBER: 1593

PACKING GROUP: 3

RID/ADR:

SHIPPING NAME: DICHLOROMETHANE

DANGEROUS GOODS CODE: 6.1(15C)

UN NUMBER: 1593

CANADIAN TDG:

SHIPPING NAME: METHYLENE CHLORIDE
HAZARD CLASS: 6.1
UN NUMBER: UN1593

===== SECTION 15 - REGULATORY INFORMATION =====

FEDERAL:

TSCA: CAS# 75-09-2 is listed on the TSCA inventory.

HEALTH & SAFETY REPORTING LIST: CAS# 75-09-2: Effective Date: October 4, 1982

CHEMICAL TEST RULES: None of the chemicals in this product are under a Chemical Test Rule.

SECTION 12B: None of the chemicals are listed under TSCA Section 12b.

TSCA SIGNIFICANT NEW USE RULE: None of the chemicals in this material have a SNUR under TSCA.

CERCLA/SARA:

SECTION 302 (RQ): None of the chemicals in this material have an RQ.

SECTION 302 (TPQ): None of the chemicals in this product have a TPQ.

SECTION 313: This material contains Methane, dichloro- (CAS# 75-09-2, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

CLEAN AIR ACT:

CAS# 75-09-2 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depleters.
This material does not contain any Class 2 Ozone depleters.

CLEAN WATER ACT:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

CAS# 75-09-2 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE:

Methane, dichloro- can be found on the following state right to know lists: California, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

This product contains Methane, dichloro-, a chemical known to the state of California to cause cancer.

CALIFORNIA NO SIGNIFICANT RISK LEVEL: CAS# 75-09-2: No significant risk level = 50 micro g/day

INTERNATIONAL:

CANADA:

CAS# 75-09-2 is listed on Canada's DSL/NDSL List.
CAS# 75-09-2 is listed on Canada's Ingredient Disclosure List.

EUROPEAN LABELING IN ACCORDANCE WITH EC DIRECTIVES:

HAZARD SYMBOLS: Not available.
RISK PHRASES:
SAFETY PHRASES:

EXPOSURE LIMITS: OEL-AUSTRALIA: TWA 100 ppm (350 mg/m3); OEL-AUSTRIA: TWA 100 ppm (360 mg/m3); OEL-BELGIUM: TWA 50 ppm (174 mg/m3); Carcinogen. OEL-CZECHOSLOVAKIA: TWA 500 mg/m3; STEL 2500 mg/m3. OEL-DENMARK: TWA 50 ppm (175 mg/m3); Skin; Carcinogen. OEL-FINLAND: TWA 100 ppm (350 mg/m3); STEL 250 ppm (870 mg/m3). OEL-FRANCE: TWA 100 ppm (360 mg/m3); STEL 500 ppm (1800 mg/m3). OEL-GERMANY: TWA 100 ppm (360 mg/m3); Carcinogen. OEL-HUNGARY: STEL 10 mg/m3; Carcinogen. OEL-JAPAN: TWA 100 ppm (350 mg/m3). OEL-THE NETHERLANDS: TWA 100 ppm (350 mg/m3); STEL 500 ppm. OEL-THE PHILLIPINES: TWA 500 ppm (1740 mg/m3). OEL-POLAND: TWA 50 mg/m3. OEL-RUSSIA: TWA 100 ppm; STEL 50 mg/m3. OEL-SWEDEN: TWA 35 ppm (120 mg/m3); STEL 70 ppm (25 mg/m3); Skin. OEL-SWITZERLAND: TWA 100 ppm (360 mg/m3); STEL 500 ppm. OEL-THAILAND: TWA 500 mg/m3; STEL 1000 mg/m3. OEL-TURKEY: TWA 500 ppm (1740 mg/m3). OEL-UNITED KINGDOM: TWA 100 ppm (350 mg/m3); STEL 250 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

===== SECTION 16 - ADDITIONAL INFORMATION =====

ADDITIONAL INFORMATION: No additional information available.

MSDS CREATION DATE: January 11, 1995

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

MSDS BJRJQ

MULTIGRAPHICS -- CLEAN PRINT - CLEANING SOLUTION, DESENSITIZE
MATERIAL SAFETY DATA SHEET
SN: 6750012976177
Manufacturer's CAGE: 09177
Part No. Indicator: A
Part Number/Trade Name: CLEAN PRINT

=====

General Information

=====

Item Name: CLEANING SOLUTION, DESENSITIZE
Company's Name: MULTIGRAPHICS *
Company's Street: 1800 W CENTRAL ROAD *
Company's City: MT. PROSPECT *
Company's State: IL *
Company's Country: US *
Company's Zip Code: 60056-2293 *
Company's Emerg Ph #: 312-870-5121 (DAY) 398-1900 (NIGHT) *
Company's Info Ph #: 312-870-5121/708-870-5087 *
Distributor/Vendor # 1: AM MULTIGRAPHICS (804-353-0111) *
Distributor/Vendor # 1 Cage: 1A714 *
Safety Data Action Code: C
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01APR89
Safety Data Review Date: 12SEP96 *
Supply Item Manager: CX *
MSDS Serial Number: BJRJG
Hazard Characteristic Code: J6
Unit Of Issue: PT
Unit Of Issue Container Qty: 1 PINT

=====

Ingredients/Identity Information

=====

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 01

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 02

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 03

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 04
=====

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Physical/Chemical Characteristics

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Appearance And Odor: ORANGE LIQUID. MILD SOLVENT ODOR.
Boiling Point: 212F, 100C
Vapor Pressure (MM Hg/70 F): UNKNOWN
Vapor Density (Air=1): UNKNOWN
Specific Gravity: 1.025
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: <1 (WATER = 1)
Solubility In Water: 100%
pH: 12.5
Corrosion Rate (IPY): UNKNOWN

=====

Fire and Explosion Hazard Data

=====

Flash Point: NONE
Flash Point Method: TCC
Extinguishing Media: NON-FLAMMABLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER SPRAY.

usual Fire And Expl Hazrds: COMBUSTION OR HEAT OF FIRE MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS AND VAPORS.

=====
Reactivity Data

Stability: YES

Cond To Avoid (Stability): NONE

Materials To Avoid: STRONG ACIDS.

Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE.

Hazardous Poly Occur: NO
=====

Health Hazard Data

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: HEALTH HAZARDS- ACUTE: EYE BURNS AND SKIN IRRITATION. CHRONIC: NONE SPECIFIED BY MANUFACTURER.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Signs/Symptoms Of Overexp: EYES: IRRITATION, BURNS. SKIN: IRRITATION.

INGESTION: GASTROINTESTINAL IRRITATION.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: EYES: FLUSH WITH LARGE AMOUNTS OF WATER FOR AT NOT APPLICABLE. INGESTION: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL AID.
=====

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: VENTILATE AREA. USE APPROPRIATE PROTECTIVE CLOTHING AND EQUIPMENT. CLEAN SPILLS WITH WARM WATER AND SOAP. ABSORB IN INERT MATERIAL, AND PLACE IN APPROPRIATE DISPOSAL CONTAINER AND COVER. FLUSH AREA WITH PLENTY OF WATER.

Neutralizing Agent: 5% ACETIC ACID SOLUTION.

Waste Disposal Method: CONTACT YOUR LOCAL ENVIRONMENTAL OFFICER. DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions-Handling/Storing: AVOID FREEZING. STORE BETWEEN 40F AND 140F.

Other Precautions: READ AND FOLLOW LABEL PRECAUTIONS. AVOID EXCESSIVE SKIN CONTACT.
=====

Control Measures

Respiratory Protection: NONE NORMALLY REQUIRED.

Ventilation: NO SPECIAL REQUIREMENT. *

Protective Gloves: NEOPRENE.

Eye Protection: GOGGLES.

Other Protective Equipment: APRON. EYE WASH STATION.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING AND BEFORE SMOKING OR EATING.

Suppl. Safety & Health Data: NONE.
=====

Transportation Data

Trans Data Review Date: 91087

DOT PSN Code: DWG

DOT Proper Shipping Name: CORROSIVE LIQUIDS, N.O.S.

DOT Class: 8

DOT ID Number: UN1760

DOT Pack Group: III

DOT Label: CORROSIVE

IMO PSN Code: ESH

IMO Proper Shipping Name: CORROSIVE LIQUID, N.O.S.

IMO Regulations Page Number: 8147

IMO UN Number: 1760

IMO UN Class: 8

IMO Subsidiary Risk Label: -
IATA PSN Code: HKW
ATA UN ID Number: 1760
ATA Proper Shipping Name: CORROSIVE LIQUID, N.O.S. *
ATA UN Class: 8
IATA Label: CORROSIVE
AFI PSN Code: HKW
AFI Prop. Shipping Name: CORROSIVE LIQUID, N.O.S.
AFI Class: 8
AFI ID Number: UN1760
AFI Pack Group: III
AFI Label: CORROSIVE
AFI Basic Pac Ref: 12-5
N.O.S. Shipping Name: SODIUM METASILICATE.

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Disposal Data

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Label Data

=====

Label Required: YES
Technical Review Date: 28MAR91
MFR Label Number: NONE
Label Status: F
Common Name: CLEAN PRINT
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Severe: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: HEALTH HAZARDS- ACUTE: EYE BURNS AND SKIN
IRRITATION. CHRONIC: NONE SPECIFIED BY MANUFACTURER. AVOID FREEZING. STORE
BETWEEN 40F AND 140F. FIRST AID: EYES: FLUSH WITH LARGE AMOUNTS OF WATER
OR AT LEAST 15 MINUTES .SEE DOCTOR. SKIN: WASH WITH SOAP AND WATER.
INHALATION: NOT APPLICABLE. INGESTION: DO NOT INDUCE VOMITING. GET
IMMEDIATE MEDICAL AID.
Protect Eye: Y
Protect Skin: Y
Label Name: MULTIGRAPHICS
Label Street: 1800 W CENTRAL ROAD
Label City: MT.PROSPECT
Label State: IL
Label Zip Code: 60056-2293
Label Country: US
Label Emergency Number: 708-870-5121 (DAY) 398-1900 (NIGHT)
Year Procured: 1991

=====

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MULTIGRAPHICS -- ELECTROSTATIC SOLUTION
MATERIAL SAFETY DATA SHEET
SN: 675000N001225

CAS# 13943-58-3
MSDS BCHHW

Manufacturer's CAGE: 09177
Part No. Indicator: A
Part Number/Trade Name: ELECTROSTATIC SOLUTION

=====

General Information

=====

Company's Name: MULTIGRAPHICS
Company's Street: 1800 W CENTRAL ROAD
Company's City: MT.PROSPECT
Company's State: IL
Company's Country: US
Company's Zip Code: 60056-2293
Company's Emerg Ph #: 312-870-5121 (DAY) 398-1900 (NIGHT)
Company's Info Ph #: 312-870-5121/708-870-5087
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Date MSDS Prepared: 01APR89
Safety Data Review Date: 20SEP95
MSDS Serial Number: BCHHW
Hazard Characteristic Code: N1
NRC/State License Number: N/A
Net Propellant Weight-Ammo: N/A

=====

Ingredients/Identity Information

=====

Proprietary: NO
Ingredient: FERRATE (4-), HEXACYANO-, TETRAPOTASSIUM; (POTASSIUM
HEXACYANOFERRATE)
Ingredient Sequence Number: 01
Percent: 2-5
NIOSH (RTECS) Number: LJ8219000
AS Number: 13943-58-3
OSHA PEL: NOT APPLICABLE
ACGIH TLV: 5 MG/M3

Proprietary: NO
Ingredient: NON HAZARDOUS INGREDIENTS
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 1000314NH
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: YELLOWISH GREEN LIQUID, SLIGHT ALMOND ODOR
Boiling Point: 212F, 100C
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): 15 @ 25C
Specific Gravity: 1.08 (H*20=1)
Evaporation Rate And Ref: SLOWER/WATER (BU AC=1)
Solubility In Water: COMPLETE
pH: 4.5

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Fire and Explosion Hazard Data

=====

Flash Point: NONE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE CONDITIONS
(FP N).
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL
PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: CATASTROPHIC ACCIDENTS, INVOLVING LGE QTYS
OF PROD & ACCOMPANIED BY FIRE OR CONT W/LGE QTYS OF STRONG ACID, WILL REQ
RESPONSE PERS TO WEAR PROPER (SUP DAT)

=====

Reactivity Data

Stability: YES
Conditions To Avoid (Stability): STRONG LIGHT & HEAT.
Materials To Avoid: CHLORINE BLEACH & STRONG ACIDS.
Hazardous Decomp Products: PRODUCT WILL SLOWLY DECOMPOSE W/FORMATION OF HYDROCYANIC ACID, COMPLEX CYANOFERRATES & CYANIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYES:MAY CAUSE IRRITATION. SKIN:PROLONGED LARGE DOSES MAY CAUSE GI IRRITATION. HEXACYANOFERRATE SALTS ARE CONSIDERED TO BE OF SLIGHT TOXICITY TO HUMANS, REGARDLESS OF WHETHER EXPOSURE IS ACUTE DERMAL, ACUTE INGESTION OR CHRONIC (EFFECTS OF OVEREXPOSURE)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexposure: HEALTH HAZARD:SYSTEMIC. ANY EFFECT ON THE HUMAN BODY IS SLIGHT, TEMPORARY & REVERSIBLE & THE EFFECT DISAPPEARS FOLLOWING TERMINATION OF EXPOSURE.
Medical Condition Aggravated By Exposure: NONE.
Emergency/First Aid Procedure: INHALATION:REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE OXYGEN/ARTIFICIAL RESPIRATION). CALL MD (FON) . EYES:FLUSH W/WATER FOR AT LEAST 15 MINS. IF IRRITATION PERSISTS, SEEK MEDICAL AID. SKIN:WASH W/SOAP & WATER. INGESTION:INDUCE VOMITING. GET MEDICAL AID IMMEDIATELY.

Precautions for Safe Handling and Use

Steps If Material Released/Spill: FLUSH W/WATER TO DRAIN.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: SMALL QUANTITIES EMPLOYED IN NORMAL USE MAY BE FLUSHED W/WATER TO DRAIN. DO NOT MIX W/ACID WASTES. LARGER QUANTITIES SHOULD NOT BE DUMPED INTO WATERWAY. CHECK FEDERAL, STATE & LOCAL REGULATIONS REGARDING DISPOSAL OF HEXACYANOFERRATE SALTS. (GENERALLY 2 PPM MAX IN STREAMS/LAKES).
Precautions-Handling/Storing: STORE IN A COOL, DARK PLACE AWAY FROM STRONG ACIDS & FIRE HAZARDS. READ LABEL PRECAUTIONS. DO NOT REUSE CONTAINER.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FON) . NOT APPLICABLE.
Ventilation: NORMAL AIR CONDITIONING.
Protective Gloves: IMPERVIOUS GLOVES (FON) .
Eye Protection: CHEMICAL WORKERS GOGGLES (FON) .
Other Protective Equipment: NOT APPLICABLE.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Supplier, Safety & Health Data: EXPOSURE HAZARD:EQUIP DUE TO & DEPENDENT UPON THE QUANTITIES OF CYANIDE.

Transportation Data

Transportation Data Review Date: 83209
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Additional Transport Data: NOT REGULATED FOR SHIPPING.

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Disposal Data

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Label Data

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Label Required: YES
Technical Review Date: 24FEB93
Label Status: G
Common Name: ELECTROSTATIC SOLUTION
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
CONTACT MAY CAUSE EYE AND SKIN IRRITATION. INGESTION MAY CAUSE
GASTROINTESTINAL IRRITATION. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AM INTERNATIONAL INC, MULTIGRAPHICS DIVISION
Label Street: 1800 WEST CENTRAL ROAD
Label City: MT PROSPECT
Label State: IL
Label Zip Code: 60056
Label Country: US
Label Emergency Number: 708-398-1900

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delete information in this archive please sent updates to dan@siri.org.

MULTIGRAPHICS -- MULTILITH CYLINDER CLEANER 83-5-101395 - SOLUTION, DEGREASING
MATERIAL SAFETY DATA SHEET
UN: 6850000666630
Manufacturer's CAGE: 09177
Part No. Indicator: A
Part Number/Trade Name: MULTILITH CYLINDER CLEANER 83-5-101395

General Information

Item Name: SOLUTION, DEGREASING
Company's Name: MULTIGRAPHICS
Company's Street: 1800 W CENTRAL ROAD
Company's City: MT. PROSPECT
Company's State: IL
Company's Country: US
Company's Zip Code: 60056-2293
Company's Emerg Ph #: 708-870-5121 (DAY) 398-1900 (NIGHT)
Company's Info Ph #: 708-870-5121
Distributor/Vendor # 1: AM MULTIGRAPHICS
Distributor/Vendor # 1 Cage: 1A714
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 003
Status: SP
Date MSDS Prepared: 01APR89
Safety Data Review Date: 31OCT92
Supply Item Manager: CX
MSDS Preparer's Name: UNKNOWN
MSDS Serial Number: BPDWV
Specification Number: NONE
Spec Type, Grade, Class: NOT APPLICABLE
Hazard Characteristic Code: J6
Unit Of Issue: PT
Unit Of Issue Container Qty: 1
Type Of Container: STD COML PKG
Net Unit Weight: 1.2 LBS

Ingredients/Identity Information

Proprietary: NO
Ingredient: NITRIC ACID (SARA III)
Ingredient Sequence Number: 01
Percent: 4
NIOSH (RTECS) Number: QU5775000
CAS Number: 7697-37-2
OSHA PEL: 2 PPM/4 STEL
ACGIH TLV: 2 PPM/4 STEL; 9293
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: ALPHA-ALUMINA (ALUMINUM OXIDE) (EPA LISTS ONLY FIBROUS FORMS)
(SARA III)
Ingredient Sequence Number: 02
Percent: 10-15
NIOSH (RTECS) Number: BD1200000
CAS Number: 1344-28-1
OSHA PEL: 15 MG/M3 TDUST
ACGIH TLV: 10 MG/M3 TDUST; 9293
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: WATER
Ingredient Sequence Number: 03
Percent: 79
NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NOT ESTABLISHED

Proprietary: NO
Ingredient: ALUMINUM SULFATE (SARA III)
Ingredient Sequence Number: 04
Percent: 10-15
NIOSH (RTECS) Number: BD1700000
CAS Number: 10043-01-3
OSHA PEL: 2 MG/M3
ACGIH TLV: 2 MG/M3; 9293
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: SILICA GEL
Ingredient Sequence Number: 05
Percent: 2-5
NIOSH (RTECS) Number: VV7310000
CAS Number: 112945-52-5
OSHA PEL: 6 MG/M3 TDUST
ACGIH TLV: 10 MG/M3 TDUST
Other Recommended Limit: NONE RECOMMENDED
=====

Physical/Chemical Characteristics

=====

Appearance And Odor: WHITE, MILKY SOLUTION
Boiling Point: 212F, 100C
Specific Gravity: 1.08
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: SLOWER THAN WATER
Solubility In Water: APPRECIABLE
Percent Volatiles By Volume: 50
Viscosity: UNKNOWN
pH: 3
Corrosion Rate (IPY): UNKNOWN
Autoignition Temperature: NONE
=====

Fire and Explosion Hazard Data

=====

Flash Point: NONE
Extinguishing Media: NONCOMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE CONDITIONS.
Special Fire Fighting Proc: WEAR A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE EQUIPMENT WHEN FIGHTING FIRES. USE WATER SPRAY TO COOL FIRE EXPOSED CONTAINERS.
Unusual Fire And Expl Hazrds: NONE
=====

Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE
Materials To Avoid: STRONG ALKALIS
Hazardous Decomp Products: CARBON MONOXIDE AND CARBON DIOXIDE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE
=====

Health Hazard Data

=====

LD50-LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYE, SKIN, GASTRO AND RESPIRATORY TRACT IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.
Signs/Symptoms Of Overexp: EYE, SKIN, GASTRO & RESPIRATORY TRACT IRRITATION.

Med Cond Aggravated By Exp: NONE KNOWN

Emergency/First Aid Proc: EYES: IMMEDIATELY FLUSH WITH RUNNING WATER FOR
T LEAST 15 MINUTES WHILE LIFTING EYELIDS OPEN. IF IRRITATION DEVELOPS OR
PERSISTS, GET MEDICAL ATTENTION. SKIN: WASH WITH SOAP AND PLENTY OF WATER.
IF IRRITATION DEVELOPS OR PERSISTS, GET MEDICAL ATTENTION. VAPOR INHALATION
UNLIKELY: REMOVE TO FRESH AIR. GET MEDICAL ATTENTION IF REQUIRED.
INGESTION: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION.

=====

Precautions for Safe Handling and Use

=====

Steps If Matl Released/Spill: ABSORB WITH INERT MATERIAL AND PLACE IN
DISPOSAL CONTAINER. NEUTRALIZE AND FLUSH SPILL AREA WITH WATER TO FLUSH
RESIDUE.

Neutralizing Agent: SODIUM BICARBONATE

Waste Disposal Method: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL
REGULATIONS.

Precautions-Handling/Storing: STORE IN A COOL, DRY PLACE. KEEP CONTAINERS
CLOSED WHEN NOT IN USE. PROTECT FROM PHYSICAL DAMAGE

Other Precautions: NONE

=====

Control Measures

=====

Respiratory Protection: NONE NORMALLY REQUIRED.

Ventilation: USE ADEQUATE MECHANICAL VENTILATION.

Protective Gloves: RUBBER

Eye Protection: SAFETY GLASSES/CHEMICAL SPLASH GOGGLES

Other Protective Equipment: READ AND FOLLOW PRECAUTIONS ON LABEL. DO NOT
REUSE BOTTLE.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING,
DRINKING OR SMOKING. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

Suppl. Safety & Health Data: NONE

=====

Transportation Data

=====

Trans Data Review Date: 92305

DOT PSN Code: DWC

DOT Proper Shipping Name: CORROSIVE LIQUIDS, N.O.S.

DOT Class: 8

DOT ID Number: UN1760

DOT Pack Group: I

DOT Label: CORROSIVE

IMO PSN Code: ESH

IMO Proper Shipping Name: CORROSIVE LIQUID, N.O.S.

IMO Regulations Page Number: 8147

IMO UN Number: 1760

IMO UN Class: 8

IMO Subsidiary Risk Label: -

IATA PSN Code: HKM

IATA UN ID Number: 1760

IATA Proper Shipping Name: CORROSIVE LIQUID, N.O.S. *

IATA UN Class: 8

IATA Label: CORROSIVE

AFI PSN Code: HKM

AFI Prop. Shipping Name: CORROSIVE LIQUID, N.O.S.

AFI Class: 8

AFI ID Number: UN1760

AFI Pack Group: I

AFI Label: CORROSIVE

AFI Special Prov: A7

AFI Basic Pac Ref: 12-4

Additional Trans Data: MFR. STATES THAT MATERIAL IS REGULATED.

=====

Disposal Data

=====

Label Data

=====

Label Required: YES

Technical Review Date: 31OCT92

MFR Label Number: NOT APPLICABLE
Label Status: F
Common Name: MULTILITH CYLINDER CLEANER
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: EYE, SKIN, GASTRO & RESPIRATORY TRACT
IRRITATION. STORE IN A COOL, DRY PLACE. KEEP CONTAINERS CLOSED WHEN NOT IN
USE. IN CASE OF SPILL: ABSORB WITH INERT MATERIAL & PLACE IN DISPOSAL
CONTAINER. NEUTRALIZE & FLUSH SPILL AREA WITH WATER TO FLUSH RESIDUE. FIRST
AID: EYES: IMMEDIATELY FLUSH WITH RUNNING WATER FOR AT LEAST 15 MINUTES
WHILE LIFTING EYELIDS OPEN. IF IRRITATION DEVELOPS OR PERSISTS, GET MEDICAL
ATTENTION. SKIN: WASH WITH SOAP AND WATER. IF IRRITATION DEVELOPS OR
PERSISTS, GET MEDICAL ATTENTION. VAPOR INHALATION UNLIKELY: REMOVE TO FRESH
AIR. GET MEDICAL ATTENTION IF REQUIRED. INGESTION: DO NOT INDUCE VOMITING.
GET MEDICAL ATTENTION.
Protect Eye: Y
Protect Skin: Y
Label Name: MULTIGRAPHICS
Label Street: 1800 W CENTRAL ROAD
Label City: MT.PROSPECT
Label State: IL
Label Zip Code: 60056-2293
Label Country: US
Label Emergency Number: 708-870-5121 (DAY) 398-1900 (NIGHT)
=====

URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

NAPHTHA, FLUID, SOLVENT

ASHLAND CHEMICAL, INC.

Subsidiary of Ashland Oil Inc.

P.O. BOX 2219

COLUMBUS, OHIO 43216

(614) 889-3333

24-HOUR
Emergency
Telephone

1(800) 274-5263

1(800) ASHLAND

000049

VM&P NAPHTHA

95-14-3500 Page:

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: VM&P NAPHTHA
CAS NUMBER: 64742-89-8

MARTIN MARIETTA
ATTN: CRESHAWANNA
P.O. BOX 628
PIKE-ON, OH 45661

05 92 011 5111434-980

PRODUCT:
INVOICE: REQST
INVOICE DATE: 01/15/92
TO:

Data Sheet No: 0014122-006
Prepared: 03/04/86
Supersedes: 09/25/84

CAS# 64742-89-8

SECTION I - PRODUCT IDENTIFICATION

General or Generic ID: ALIPHATIC HYDROCARBON

DOT Hazard Classification: FLAMMABLE LIQUID (173.115)

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION. SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
ALIPHATIC PETROLEUM DISTILLATES CAS #: 64742-89-8	100	300 PPM	300 PPM	(1)

Notes:

(1) NIOSH RECOMMENDS A LIMIT OF 350 MG/CUM - 8 HOUR TIME WEIGHTED AVERAGE, 1800 MG/CUM AS DETERMINED BY A 15 MINUTE SAMPLE.

VM&P NAPHTHA CONTAINS LESS THAN 8% XYLENE, CAS# 1330-20-7, WHICH HAS A PEL/TLV OF 100 PPM, STEL OF 150 PPM; AND LESS THAN 2% ETHYL BENZENE, CAS# 100-41-4, WHICH HAS A PEL/TLV OF 100 PPM, STEL OF 125 PPM. XYLENE AND ETHYL BENZENE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

OSHA SHORT TERM EXPOSURE LIMIT (STEL) FOR VM&P NAPHTHA IS 400 PPM.

SECTION III - PHYSICAL DATA

Boiling Point	for PRODUCT	240.00 - 285.00 Deg F (115.55 - 140.55 Deg C)
Vapor Pressure	for PRODUCT	15.00 mm Hg @ 100.00 Deg F (37.77 Deg C)
Specific Vapor Density	AIR = 1	3.8
Specific Gravity		.727 - .750 @ 15.55 Deg C
Percent Volatiles		
Evaporation Rate	(ETHER = 1)	

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT(TCC) 50.0 Deg F (10.0 Deg C)

EXPLOSIVE LIMIT (PRODUCT) LOWER - .9%

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS: CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SPECIAL FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR MAY BE MOVED BY VENTILATION AND IGNITED BY PILOT LIGHTS, OTHER FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS INCLUDING TANK CARS AND TANK TRUCKS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.

NFPA CODES: HEALTH- 1 FLAMMABILITY- 3 REACTIVITY- 0

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL 300 PPM

THRESHOLD LIMIT VALUE 300 PPM



VM&P NAPHTHA

Page: 2

SECTION V-HEALTH HAZARD DATA (Continued)

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.
BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS, AND EVEN DEATH.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.
IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET MEDICAL ATTENTION.
IF SWALLOWED: DO NOT INDUCE VOMITING. KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH: STRONG OXIDIZING AGENTS

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ELIMINATE ALL SOURCES OF IGNITION SUCH AS FLARES, FLAMES (INCLUDING PILOT LIGHTS), AND ELECTRICAL SPARKS.

Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material and transfer to hood.

SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELLED INTO CONTAINERS.

PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: DESTROY BY LIQUID INCINERATION.

CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

DESTROY BY LIQUID INCINERATION WITH OFF-GAS SCRUBBER.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS: NITRILE RUBBER, NEOPRENE

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING FROM THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CORRECT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

PORTS MSDS #: 5423

PRODUCT: NITRIC ACID

PART NUMBER: A509-500

FORMULA: HNO3

KEYWORD: ACID

PORTS NUMBER: 03-401-1025; 03-401-1028; 66-001-6158

PORTS MISC INFO:

01-01-1025

01-01-1028

PORTS RATING: HFR=300

MANUFACTURER:

FISHER SCIENTIFIC CO.

1 REAGENT LANE, P.O. BOX 375

FAIR LAWN

NJ

07410

PHONE: PHONE: 201-796-7100

EMERGENCY PHONE: 201-796-7100

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 186.8 F

Melting Point. . . . EQ -43.6 F

Freezing Point. . . . EQ -43.6 F

Pour Point. . . . NG

Softening Point. . . NG

Specific Gravity . . EQ 1.50

NOTE: DENSITY.

Vapor Pressure . . . EQ 6.8

NOTE: MMHG.

Vapor Density. . . . NA

NOTE: NOT AVAILABLE.

Percent Volatiles. . NG

Evaporation Rate . . NA

NOTE: NOT AVAILABLE.

pH EQ 1.0

Molecular Weight . . EQ 63.0119

Viscosity. NA

NOTE: NOT AVAILABLE.

Solubility in Water. SOLUBLE IN WATER.

Odor/Appearance/Other Characteristics:

TRANSPARENT, CLEAR OR YELLOWISH LIQUID, STRONG, ACRID ODOR.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT AVAILABLE.

Flash Point, Open Cup . . . NA

NOTE: NOT AVAILABLE.

Fire Point. NG

Auto Ignition. NA

NOTE: NOT AVAILABLE.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT AVAILABLE.

Upper (UEL). NA

NOTE: NOT AVAILABLE.

Shipping Regulations

UN/NA Number. UN2031

D.O.T. Hazard Class. . . . 8

Label NOT GIVEN

Proper Shipping Name . . . NITRIC ACID

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 12/20/94

==== Component Information =====

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5.2
STEL (PPM):
STEL (MG/M3): 10
Product #: BT 69 71
C.A.S. No.: 7697372

Note:

PEL (FINAL & VACATED) & TLV: 2 PPM / OSHA & ACGIH STEL: 4 PPM.

WATER

OSHA PEL (PPM): N*
OSHA PEL (MG/M3):
ACGIH TLV (PPM): N*
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product #: BT 29 31
C.A.S. No.: 7732185

Note:

PEL (FINAL & VACATED), TLV & NIOSH: NONE LISTED.

===== SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION =====

PRODUCT NAME: Nitric Acid
16550

MSDS NAME: Nitric Acid

CATALOG NUMBERS: A198C 212, A198C-212, A198C4X 212, A200 212, A200 500, A200 612GAL, A200-212, A200-500, A200-612G, A200-612GAL, A200-612GL, A200C-2.5, A200C-212, A200CAX 212, A200C4X212 1, A200FP 500, A200S 500, A200S-2.5, A200S-212, A200S-500, A200S4X212, A200SI 212, A200SI-21, A200SI-212, A200SI21201, A206C 212, A206C-212, A206C4X 212, A467 500, A467-1, A467-2, A467-250, A467-500, A4672, A483 212, A483-212, A509 212, A509 212 002, A509 500, A509-212, A509-500, A509212001, A509SK212, S719721MF, S71972MF, S71972SC, S75623-2, S75623-3, S76523

SYNONYMS: Azotic acid, engravers nitrate, hydrogen nitrate.

DATE: 04/25/96

CAT NO.: A200500

FOR INFORMATION CALL: 201-796-7100
EMERGENCY NUMBER: 201-796-7100
FOR CHEMTREC ASSISTANCE CALL: 800-424-9300

COMPANY IDENTIFICATION:

MANUFACTURER'S NAME AND ADDRESS:

FISHER SCIENTIFIC
1 REAGENT LANE
FAIR LAWN, NJ 07410
(201) 796-7100

===== SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

CHEMICAL NAME	EINECS#
Nitric acid	unlisted
Water	unlisted

===== SECTION 3 - HAZARDS IDENTIFICATION =====

EMERGENCY OVERVIEW:

APPEARANCE: Clear, colorless to yellow liquid with a strong, acrid odor.

Danger! Oxidizer. Contact with other material may cause fire. Corrosive. Cause eye, skin, and digestive tract burns. Causes severe respiratory tract irritation. May cause perforation of the digestive tract and erosion of teeth.

TARGET ORGANS: None.

POTENTIAL HEALTH EFFECTS:

EYE:

Causes severe eye burns.
May irreversible eye injury.

SKIN:

May cause severe skin irritation.
Causes skin burns.
May cause deep, penetrating ulcers of the skin.

INGESTION:

Causes gastrointestinal tract burns.
May cause perforation of the digestive tract.

INHALATION:

May be fatal if inhaled.
Effects may be delayed.
May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

CHRONIC:

Repeated inhalation may cause chronic bronchitis.
Repeated exposure may cause erosion of teeth.

===== SECTION 4 - FIRST AID MEASURES =====

EYES: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids.

Get medical aid immediately.
Do NOT allow victim to rub or keep eyes closed.

SKIN: Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Get medical aid if irritation develops or persists.
Wash clothing before reuse.

INGESTION: DO NOT induce vomiting and seek IMMEDIATE MEDICAL ADVICE.

INHALATION: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

No specific antidote exists.

===== SECTION 5 - FIRE FIGHTING MEASURES =====

GENERAL INFORMATION: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Strong oxidizer. Contact with combustible materials may cause a fire.
Use water spray to keep fire-exposed containers cool.
Substance is noncombustible.

EXTINGUISHING MEDIA: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

AUTOIGNITION TEMPERATURE: Not available.

FLASH POINT: Not available.

EXPLOSION LIMITS:

LOWER: Not available.
UPPER: Not available.

===== SECTION 6 - ACCIDENTAL RELEASE MEASURES =====

GENERAL INFORMATION: Use proper personal protective equipment as indicated in Section 8.

SPILLS/LEAKS: Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection Section.

===== SECTION 7 - HANDLING AND STORAGE =====

HANDLING:

Wash thoroughly after handling.
Remove contaminated clothing and wash before reuse.
Use with adequate ventilation.
Do not get on skin or in eyes.
Do not ingest or inhale.

STORAGE: Store in a cool, dry, well-ventilated area away from incompatible substances.

===== SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION =====

ENGINEERING CONTROLS: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

EXPOSURE LIMITS:

CHEMICAL NAME	ACGIH	NIOSH	OSHA - FINAL PELS
Nitric acid	2ppm; 5.2 mg/m3; 4 ppm STEL; 10 mg/m3 STEL	2 ppm TWA; 5 mg/m3 TWA; 4 ppm STEL; 10 mg/m3 STEL	2 ppm TWA; 5 mg/m3 TWA
Water	none listed	none listed	none listed

OSHA VACATED PELS:

NITRIC ACID: 2 ppm TWA; 5 mg/m3 TWA; 4 ppm STEL; 10 mg/m3 STEL

WATER: No OSHA Vacated PELs are listed for this chemical.

PERSONAL PROTECTIVE EQUIPMENT:

EYES: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

SKIN: Wear appropriate protective gloves to prevent skin exposure.

CLOTHING: Wear appropriate protective clothing to prevent skin exposure.

RESPIRATORS: Follow the OSHA respirator regulations found in 29CFR 1010.134. Always use a NIOSH-approved respirator when necessary.

===== SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

DECOMPOSITION TEMPERATURE: Not available.

MOLECULAR FORMULA: HNO3

===== SECTION 10 - STABILITY AND REACTIVITY =====

CHEMICAL STABILITY: Decomposes when in contact with air, light, or organic matter.

CONDITIONS TO AVOID: High temperatures, incompatible materials, moisture, reducing agents.

INCOMPATIBILITIES WITH OTHER MATERIALS: Reacts with over 150 chemical combinations. Refer to NFPA Fire Protection Guide for specifics. Reacts explosively with organic materials and combustibles.

HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides.

HAZARDOUS POLYMERIZATION: Has not been reported.

===== SECTION 11 - TOXICOLOGICAL INFORMATION =====

RTECS#:

CAS# 7697-37-2: QU5775000 QU5900000

CAS# 7732-18-5: ZC0110000

LD50/LC50:

CAS# 7732-18-5: Oral rat: LD50 = 90 mL/kg.

CARCINOGENICITY:

NITRIC ACID: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

WATER: Not listed by ACGIH, IARC, NIOSH, NTP, or, OSHA.

EPIDEMIOLOGY: No information available.

TERATOGENICITY:

EFFECTS ON NEWBORN: Biochemical and metabolic, Oral-rat TDLo=2345 mg/kg (female 18D post)

FETOTOXICITY: Stunted fetus, Oral-rat TDLo=21150 mg/kg (female 1-21D post)

REPRODUCTIVE EFFECTS: No information available.

NEUROTOXICITY: No information available.

MUTAGENICITY: No information available.

OTHER STUDIES: None.

==== SECTION 12 - ECOLOGICAL INFORMATION =====

ECOTOXICITY:

MOSQUITO FISH: TLm=72 ppm/96H (fresh water)

COCKLE: LC50=330-1000 ppm/48H (salt water)

ENVIRONMENTAL FATE: No information available.

PHYSICAL/CHEMICAL: No information available.

PHYSICAL/CHEMICAL: None.

===== SECTION 13 - DESPOSAL CONSIDERATIONS =====

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-SERIES MAXIMUM CONCENTRATION OF CONTAMINANTS: Not listed.

RCRA D-SERIES CHRONIC TOXICITY REFERENCE LEVELS: Not listed.

RCRA F-SERIES: Not listed.

RCRA P-SERIES: Not listed.

RCRA U-SERIES: Not listed.

Non listed as a material banned from land disposal according to RCRA.

===== SECTION 14 - TRANSPORT INFORMATION =====

US DOT:

SHIPPING NAME: NITRIC ACID

HAZARD CLASS: 8

UN NUMBER: UN2031

PACKING GROUP: I

IMO:

SHIPPING NAME: NITRIC ACID

HAZARD CLASS: 8

UN NUMBER: 2031

PACKING GROUP: 2

IATA:

SHIPPING NAME: NITRIC ACID

HAZARD CLASS: 8

UN NUMBER: 2031

PACKING GROUP: 2

RID/ADR:

SHIPPING NAME: NITRIC ACID, OTHER THAN RED FUMING, WITH LESS THAN 70% ACID

DANGEROUS GOODS CODE: 8(2B)

UN NUMBER: 2031

CANADIAN TDG:

SHIPPING NAME: NITRIC ACID

HAZARD CLASS: 8(9.2)

UN NUMBER: UN2031

===== SECTION 15 - REGULATORY INFORMATION =====

FEDERAL:

TSCA:

CAS# 7697-37-2 is listed on the TSCA inventory.

CAS# 7732-18-5 is listed on the TSCA inventory.

HEALTH & SAFETY REPORTING LIST: None of the chemicals are on the Health & Safety Reporting List.

CHEMICAL TEST RULES: None of the chemicals in this product are under a Chemical Test Rule.

SECTION 12B: None of the chemicals are listed under TSCA Section 12b.

TSCA SIGNIFICANT NEW USE RULE: None of the chemicals in this material have a SNUR under TSCA.

CERCLA/SARA:

SECTION 302 (RQ): None of the chemicals in this material have an RQ.

SECTION 302 (TPQ): CAS# 7697-37-2: 1000 pounds

SECTION 313: This material contains Nitric acid (CAS# 7697-37-2, 69-71%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

CLEAN AIR ACT:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depleters.
This material does not contain any Class 2 Ozone depleters.

CLEAN WATER ACT:

CAS# 7697-37-2 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: CAS# 7697-37-2 is considered highly hazardous by OSHA.

STATE:

Nitric acid can be found on the following state right to know lists:
California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

Not present on state lists from CA, PA, MN, MA, FL, or NJ.

CALIFORNIA NO SIGNIFICANT RISK LEVEL: None of the chemicals in this product are listed.

INTERNATIONAL:

CANADA:

CAS# 7697-37-2 is listed on Canada's DSL/NDL List.
CAS# 7732-18-5 is listed on Canada's DSL/NDL List.
CAS# 7697-37-2 is listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

EUROPEAN LABELING IN ACCORDANCE WITH EC DIRECTIVES:

HAZARD SYMBOLS: Not available
RISK PHRASES:
SAFETY PHRASES:

EXPOSURE LIMITS: OEL-ARAB REPUBLIC OF EGYPT: TWA 2 ppm (5 mg/m3).
OEL-AUSTRALIA: TWA 2 ppm (5 mg/m3); STEL 4 ppm (10 mg/m3). OEL-BELGIUM: TWA 2 ppm (5.2 mg/m3); STEL 4 ppm (10 mg/m3). OEL-CZECHOSLOVAKIA: TWA 2.5 mg/m3;

STEL 5 mg/m3. OEL-DENMARK: TWA 2 ppm (5 mg/m3). OEL-FINLAND: TWA 2 ppm (5 mg/m3); STEL 5 ppm (13 mg/m3); Skin. OEL-FRANCE: TWA 2 ppm (5 mg/m3); STEL 4 ppm (10 mg/m3). OEL-GERMANY: TWA 10 ppm (25 mg/m3). OEL-HUNGARY: STEL 5 mg/m3. -JAPAN: TWA 2 ppm (5.2 mg/m3). OEL-THE PHILIPPINES: TWA 2 ppm (5 mg/m3). OEL-POLAND-POLAND: TWA 10 mg/m3. OEL-RUSSIA: TWA 2 ppm; STEL 2 mg/m3; Skin. OEL-SWEDEN: TWA 2 ppm (5 mg/m3); STEL 5 ppm (13 mg/m3). OEL-SWITZERLAND: TWA 2 ppm (5 mg/m3); STEL 4 ppm (1 mg/m3). OEL-THAILAND: TWA 2 ppm (5 mg/m3). OEL-TURKEY: TWA 2 ppm (5 mg/m3). OEL-UNITED KINGDOM: TWA 2 ppm (5 mg/m3); STEL 4 ppm (10 mg/m3). OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV.

===== SECTION 16 - ADDITIONAL INFORMATION =====

ADDITIONAL INFORMATION: No additional information available.

MSDS CREATION DATE: December 20, 1994

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

PORTS MSDS #: 5259

PRODUCT: PHOSPHORIC ACID

PART NUMBER:

FORMULA: H3PO4

KEYWORD: ACID

PORTS NUMBER: 03-401-1045

PORTS MISC INFO:
01-01-1045

PORTS RATING: HFR=310

MANUFACTURER:
MALLINCKRODT, INC.
P.O. BOX 800
PARIS
KY

40362
PHONE: PHONE:
EMERGENCY PHONE: 314-539-1600

===== Physical/Chemical Characteristics =====

Boiling Point.	EQ 316 F	NOTE: 158'C.
Melting Point.	EQ 70 F	NOTE: 21'C.
Freezing Point	NG	
Pour Point	NG	
Softening Point.	NG	
Specific Gravity	EQ 1.69	NOTE: DENSITY: 14.08.
Vapor Pressure	EQ 2.16	NOTE: MMHG, 20'C.
Vapor Density.	EQ 3.4	
Percent Volatiles.	NG	
Evaporation Rate	N*	NOTE: NO INFORMATION FOUND
pH	NG	
Molecular Weight	EQ 98.00	
Viscosity.	NG	
Solubility in Water. MISCIBLE IN ALL PORTIONS IN WATER.		
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS SYRUPY LIQUID, ODORLESS.		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup	NG
Flash Point, Open Cup	NG
Fire Point.	NG
Auto Ignition.	NG
Explosive/Flammable Limits	
Lower (LEL).	NG
Upper (UEL).	NG
Shipping Regulations	
UN/NA Number.	NG
D.O.T. Hazard Class.	CORROSIVE MATERIAL
Label	NOT GIVEN
Proper Shipping Name	NOT GIVEN

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 9/05/85

artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician.

E HEALTH HAZARD INFORMATION SECTION.

DOT HAZARD CLASS: Corrosive Material

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

===== FIRE AND EXPLOSION INFORMATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

FIRE: Not considered to be a fire hazard. Contact with most metals causes formation of flammable and explosive hydrogen gas.

EXPLOSION: Not considered to be an explosion hazard.

FIRE EXTINGUISHING MEDIA: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool. If water is used, use in abundance to control heat and acid build-up.

SPECIAL INFORMATION: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA RATINGS: HEALTH: 2, FLAMMABILITY: 0, REACTIVITY: 0

===== REACTIVITY DATA =====

STABILITY: Stable under ordinary conditions of use and storage. Substance can supercool without crystallizing.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic fumes of phosphorous oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITIES: Strong caustics, metals, sulfides, and sulfites. A strong mineral acid, contact with water can cause liberation of much heat and violent spattering.

===== LEAK/SPILL DISPOSAL INFORMATION =====

Dike and cover leaking or spilled liquid with dirt, vermiculite, kitty-litter or other inert absorbent. Cover spill with sodium bicarbonate or soda ash and mix. Clean-up personnel require protective clothing and respiratory protection from vapors and mists. Neutralized waste may be containerized and disposed in a RCRA approved waste disposal facility. Flush area of spill with dilute soda ash solution and discard to sewer.

REPORTABLE QUANTITY (RQ) (CWA/CERCLA): 5000 lbs.

Ensure compliance with local, state and federal regulations.

===== HEALTH HAZARD INFORMATION =====

EXPOSURE/HEALTH EFFECTS:

INHALATION: Inhalation is not an expected hazard unless misted or heated to high temperatures. Mist or vapor inhalation can cause irritation to the nose, throat, and upper respiratory tract. Severe exposures can lead to a chemical pneumonitis.

INGESTION: Corrosive. May cause sore throat, abdominal pain, nausea, and severe burns of the mouth, throat, and stomach.

SKIN CONTACT: Corrosive. May cause redness, pain, and severe skin burns.

EYE CONTACT: Corrosive. May cause redness, pain, blurred vision, eye burns, and permanent eye damage.

CHRONIC EXPOSURE: No information found.

AGGRAVATION OF PRE-EXISTING CONDITIONS: Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

FIRST AID:

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If swallowed, DO NOT induce vomiting. Give large quantities of water or milk if available. Call a physician immediately. Never give anything by mouth to an unconscious person.

SKIN EXPOSURE: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

EYE EXPOSURE: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

TOXICITY DATA (RTECS, 1986):

ORAL RAT LD50: 1530 mg/kg

SKIN RABBIT LD50: 2740 mg/kg

AQUATIC TOXICITY RATING TLm 96: 1000-10 ppm

===== OCCUPATIONAL CONTROL MEASURES =====

AIRBORNE EXPOSURE LIMITS:

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): 1 mg/m3 (TWA)

ACGIH THRESHOLD LIMIT VALUE (TLV): 1 mg/m3 (TWA), 3 mg/m3 (STEL)

VENTILATION SYSTEM: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition for details.

PERSONAL RESPIRATORS (NIOSH APPROVED): If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

SKIN PROTECTION: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

EYE PROTECTION: Use chemical safety goggles and/or full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

===== STORAGE AND SPECIAL INFORMATION =====

keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture, incompatibilities, and direct sunlight. Corrosive to mild steel. Store in rubber lined or 316 stainless steel designed for phosphoric acid.

===== ADDENDUM =====

THIS ADDENDUM MUST NOT BE DETACHED FROM THE MSDS. IDENTIFIES SARA 313 SUBSTANCE(S). ANY COPYING OR REDISTRIBUTION OF THE MSDS MUST INCLUDE A COPY OF THIS ADDENDUM.

(CHEM.KEY: PHACD)

REGULATORY STATUS:

HAZARD CATEGORIES FOR SARA SECTION 311/312 REPORTING:

ACUTE X	CHRONIC	FIRE	PRESSURE	REACTIVE
PRODUCT OR COMPONENTS OF PRODUCT		SARA EHS SECT.302 RQ (LBS.)	TPQ (LBS.)	SARA SECTION 313 CHEMICALS NAME LIST CHEMICAL CATEGORY
PHOSPHORIC ACID Phosphoric acid (7664-38-2) 85%	No	No	No	No
		CERCLA SEC.103 RQ (LBS.)		RCRA SEC.261.33
PHOSPHORIC ACID Phosphoric acid (7664-38-2) 85%				

SARA SECTION 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA SECTION 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk(*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA SECTION 313 CHEMICALS: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA SEC.103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

===== SPECIAL NOTES =====

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RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

PORTS MSDS #: 625

PRODUCT: POTASSIUM FERRICYANIDE

PART NUMBER:

FORMULA: K3-FE-C6-N6

KEYWORD: CYANIDE

PORTS NUMBER: 034165960; 03-416-5960

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=200

MANUFACTURER:
SPECTRUM CHEMICAL MFG. CORP.
14422 S. SAN PEDRO STREET
GARDENA
CA

90248
PHONE: 310-516-8000
EMERGENCY PHONE: 310-516-8000

===== Physical/Chemical Characteristics =====

Boiling Point. . . . NG
Melting Point. . . . N*
Freezing Point . . . NG
Pour Point NG
Softening Point. . . NG

NOTE: DECOMPOSES.

Specific Gravity . . EQ 1.85
Vapor Pressure . . . NG
Vapor Density. . . . NG
Percent Volatiles. . NG
Evaporation Rate . . NG
pH NG
Molecular Weight . . EQ 329.26
Viscosity. NG
Solubility in Water. 33% @39°F / SOLVENT SOLUBILITY: ACETONE.
Odor/Appearance/Other Characteristics:
RUBY RED MONOCLINIC CRYSTALS OR POWDER.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NG
Flash Point, Open Cup . . . NG
Fire Point. NG
Auto Ignition. NG
Explosive/Flammable Limits
Lower (LEL). NG
Upper (UEL). NG

Shipping Regulations
UN/NA Number. NG
D.O.T. Hazard Class. . . NOT GIVEN
Label NOT GIVEN
Proper Shipping Name . . NOT GIVEN

=====

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 3/24/93

===== Component Information =====

POTASSIUM FERRICYANIDE

OSHA PEL (PPM): NE

OSHA PEL (MG/M3):

ACGIH TLV (PPM): NE

ACGIH TLV (MG/M3):

STEL (PPM): NG

STEL (MG/M3):

Product #: EQ 100

C.A.S. No.: 13746662

Note:

NO OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, OR NIOSH.

===== SUBSTANCE IDENTIFICATION =====

SUBSTANCE: POTASSIUM FERRICYANIDE

TRADE NAMES/SYNONYMS: POTASSIUM FERRICYANATE; TRIPOTASSIUM HEXACYANOFERRATE;
RED PRUSSIATE OF POTASH; RED POTASSIUM PRUSSIATE; FERRATE(3-), HEXAKIS
(CYANO-C)-, TRIPOTASSIUM; TRIPOTASSIUM FERRIC HEXACYANIDE; TRIPOTASSIUM
FERRICYANIDE; TRIPOTASSIUM IRON HEXACYANIDE; KODAK FARMER'S REDUCER, PART A
(KODAK); KODAK POTASSIUM FERRICYANIDE; K3FE (CN) 6; OHS19380

CHEMICAL FAMILY: INORGANIC SALT

MOLECULAR FORMULA: K3-FE-C6-N6

MOLECULAR WEIGHT: 329.26

CAS NUMBER: 13746-66-2

RTECS NUMBER: LJ8225000

CERCLA RATINGS (SCALE 0-3):

HEALTH = 2

FIRE = 0

REACTIVITY = 0

PERSISTENCE = 3

NFPA RATINGS (SCALE 0-4):

HEALTH = 1

FIRE = 0

REACTIVITY = 0

PHONE: (310) 516-8000

EMERGENCY CONTACT:

CHEMTREC: (800) 424-9300

SPECTRUM TECHNICAL SERVICES (310) 516-8000

MANUFACTURER'S NAME AND ADDRESS:

SPECTRUM CHEMICAL MFG. CORP.

14422 S. SAN PEDRO STREET

GARDENA, CA 90248-9985

===== COMPONENTS AND CONTAMINANTS =====

SEE COMPONENT INFORMATION.

OTHER CONTAMINANTS: NONE

==== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

SOLVENT SOLUBILITY: ACETONE; SLIGHTLY SOLUBLE IN ALCOHOL

===== FIRE AND EXPLOSION DATA =====

FIRE AND EXPLOSION HAZARD: NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA: DRY CHEMICAL, WATER SPRAY OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES: USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING: MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. FIGHT FIRE FROM MAXIMUM DISTANCE. STAY AWAY FROM ENDS OF TANKS. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL; DO NOT SCATTER THE MATERIAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 55).

USE AGENT SUITABLE FOR TYPE OF FIRE. DO NOT USE WATER ON MATERIAL. FOR LARGE FIRES USE WATER IN FLOODING QUANTITIES AS FOG AND SPRAY. AVOID BREATHING POISONOUS VAPORS, KEEP UPWIND.

===== TOXICITY =====

POTASSIUM FERRICYANIDE:

TOXICITY DATA: 2970 MG/KG ORAL-MOUSE LD50; 1600 MG/KG ORAL-RAT LDLO; MUTAGENIC DATA (RTECS).

CARCINOGEN STATUS: NONE

ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION.

TARGET EFFECTS: NO DATA AVAILABLE.

===== HEALTH EFFECTS AND FIRST AID =====

INHALATION:

POTASSIUM FERRICYANIDE:

ACUTE EXPOSURE: NO SPECIFIC DATA AVAILABLE. FERRICYANIDE SALTS DO NOT READILY RELEASE CYANIDE. HOWEVER, CERTAIN INDUSTRIAL PROCESSES MAY RELEASE CYANIDE, WHICH IS A CHEMICAL ASPHYXANT.

CHRONIC EXPOSURE: NO DATA AVAILABLE.

FIRST AID: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

POTASSIUM FERRICYANIDE:

ACUTE EXPOSURE: NO DATA AVAILABLE, MAY BE IRRITATING.

CHRONIC EXPOSURE: NOT DATA AVAILABLE.

FIRST AID: REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

POTASSIUM FERRICYANIDE:

ACUTE EXPOSURE: NO DATA AVAILABLE, MAY BE IRRITATING.

CHRONIC EXPOSURE: NO DATA AVAILABLE.

FIRST AID: WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

POTASSIUM FERRICYANIDE:

ACUTE EXPOSURE: 2970 MG/KG IS THE LETHAL DOSE IN MICE. SYMPTOMS OF POISONING HAVE NOT BEEN REPORTED. INGESTION OF CYANIDE SALTS MAY CAUSE IRREGULAR RESPIRATION, A SUDDEN LOSS OF CONSCIOUSNESS, FOLLOWED BY VIOLENT CONVULSIONS, PARALYSIS AND DEATH FROM RESPIRATORY ARREST. THERE IS INSUFFICIENT DATA TO DETERMINE WHETHER CYANIDE IS RELEASED FROM INGESTION OF FERRICYANIDES.

CHRONIC EXPOSURE: NO DATA AVAILABLE.

FIRST AID: IN CASE OF INGESTION OF LARGE AMOUNTS, INDUCE VOMITING. GET MEDICAL ATTENTION. (DEICHMANN AND GERARDE, TOXICOLOGY OF DRUGS AND CHEMICALS)

ANTIDOTE: THE FOLLOWING ANTIDOTE HAS BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

FOR CYANIDE POISONING: IF SYMPTOMS OF CYANIDE POISONING ARE EVIDENT, ADMINISTER IMMEDIATELY BEFORE ANY OTHER FIRST AID MEASURES. ADMINISTER AMYL NITRITE (AMYL NITRITE PERLES) BY INHALATION FOR 15 TO 30 SECONDS OF EVERY MINUTE, WHILE SODIUM NITRITE SOLUTION IS BEING PREPARED. DISCONTINUE AMYL NITRITE AND IMMEDIATELY INJECT 10 ML OF A 3% SOLUTION OF SODIUM NITRITE INTRAVENOUSLY OVER A PERIOD OF 2 TO 4 MINUTES. IF NECESSARY, INJECT A NON-STERILE SOLUTION. DO NOT REMOVE THE NEEDLE. CAUTION: APPROPRIATE ADJUSTMENTS IN THE DOSE SHOULD BE MADE ON A BODY WEIGHT BASIS. THROUGH THE SAME NEEDLE, INFUSE INTRAVENOUSLY 50 ML OF A 25% AQUEOUS SOLUTION OF SODIUM THIOSULFATE. THE INJECTION SHOULD TAKE ABOUT 10 MINUTES. OTHER CONCENTRATIONS (5 TO 50%) ARE PERMISSIBLE IF THE TOTAL DOSE IS HELD AT APPROXIMATELY 12 GRAMS. OXYGEN THERAPY MAY BE OF VALUE IN COMBINATION WITH NITRITE AND THIOSULFATE THERAPY. IF SYMPTOMS RECUR, THE INJECTIONS OF NITRITE AND THIOSULFATE MAY BE REPEATED AT HALF THE ABOVE DOSES. IN VERY SEVERE POISONING IT IS SAFER AND PERHAPS MORE EFFICIENT TO KEEP REPEATING THE THIOSULFATE INJECTIONS INSTEAD OF THE NITRITE (GOSSELIN, SMITH, HODGE, CLINICAL TOXICOLOGY OF COMMERCIAL PRODUCTS, 5TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

===== REACTIVITY =====

REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES IN A CLOSED CONTAINER. AQUEOUS SOLUTIONS MAY DECOMPOSE ON EXPOSURE TO LIGHT.

INCOMPATIBILITIES:

POTASSIUM FERRICYANIDE:

ACIDS: DECOMPOSITION WITH LIBERATION OF HYDROCYANIC ACID.

AMMONIA: POSSIBLE EXPLOSION ON CONTACT.

CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): EXPLOSION ON HEATING ABOVE 196 C.

HYDROCHLORIC ACID: FORMATION OF ENDOTHERMIC COMPLEX FERRICYANIC ACID.

SODIUM NITRITE: FORMATION OF EXPLOSIVE COMPOUND.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE HIGHLY TOXIC FUMES OF HYDROGEN CYANIDE.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

===== STORAGE AND DISPOSAL =====

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE: STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

CONDITIONS TO AVOID: NONE REPORTED.

===== SPILL AND LEAK PROCEDURES =====

OCCUPATIONAL SPILL: NO SPECIAL PRECAUTIONS INDICATED.

===== PROTECTIVE EQUIPMENT =====

ENTILATION: PROVIDE LOCAL EXHAUST VENTILATION SYSTEM.

RESPIRATOR: THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY DUST AND MIST RESPIRATOR.

ANY AIR-PURIFYING RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY POWERED AIR-PURIFYING RESPIRATOR WITH A DUST AND MIST FILTER.

ANY POWERED AIR-PURIFYING RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR OPERATED IN THE PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE OR CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR

OTHER POSITIVE-PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE. THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

===== SPECIAL NOTES =====

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CREATION DATE: 12/18/84

REVISION DATE: 03/24/93

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CHEM SERVICE -- **PROPANOL**, O-233
MATERIAL SAFETY DATA SHEET
NSN: 681000N066037
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: PROPANOL, O-233

General Information

Company's Name: CHEM SERVICE INC
Company's P. O. Box: 3108
Company's City: WEST CHESTER
Company's State: PA
Company's Country: US
Company's Zip Code: 19381
Company's Emerg Ph #: 215-692-3026
Company's Info Ph #: 215-692-3026
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01SEP88
Safety Data Review Date: 06NOV95
MSDS Serial Number: CBDCW

Ingredients/Identity Information

Proprietary: NO
Ingredient: PROPIONALDEHYDE; (PROPANOL) (SARA 313) (CERCLA)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: UE0350000
CAS Number: 123-38-6
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID.
Boiling Point: 120F, 49C
Melting Point: -114F, -81C
Vapor Density (Air=1): 0.807
Solubility In Water: SOLUBLE

Fire and Explosion Hazard Data

Flash Point: 15.8F, -9.0C
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL POWDER OR WATER SPRAY.

CAS# 123-38-6
MSDS CBDCW
Propanol

Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL
PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG
BASES, STRONG REDUCING AGENTS.
Hazardous Decomp Products: DECOMPOSITION LIBERATES TOXIC FUMES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE SPECIFIED BY MANUFACTURER.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: CONTACT LENSES SHOULD NOT BE WORN IN
LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS-AVOID DIRECT
PHYSICAL CONTACT! CAN BE HARMFUL IF INHALED, SWALLOWED, ABSORBED THROUGH
SKIN. CAN CAUSE EYE AND SKIN IRRITATION. DUST AND/OR VAPORS CAN CAUSE
IRRITATION TO RESPIRATORY TRACT. CAN BE IRRITATING TO MUCOUS MEMBS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: AN ANTIDOTE IS SUBSTANCE INTENDED TO COUNTERACT
EFT OF POIS. IT SHOULD BE ADMIN ONLY BY MD/TRAINED EMER PERS. MED ADVICE
CAN BE OBTAINED FROM POIS CTL CTR. EYES:FLUSH CONTINUOUSLY W/ WATER FOR @
LST 15 MIN. SKIN:FLUSH W/WATER FOR 15-20 MIN. IF NO BURNS HAVE OCCURRED,
USE SOAP & WATER TO CLEANSE SKIN. REMOVE & WASH CONTAM CLTHG. GET MED ATTN
IF NEC. INHAL:REMOVE TO FRESH AIR. ADMIN OXYG IF (SUPDAT)

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPROPRIATE OSHA-
REGULATED EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE OR SIMILAR
MATERIAL. SWEEP UP AND PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR
DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL

REGULATIONS (FP N). BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
Precautions-Handling/Storing: AVOID CONTACT WITH SKIN, EYES AND CLOTHING. KEEP TIGHTLY CLOSED AND STORE IN A COOL, DRY PLACE. STORE ONLY WITH COMPATIBLE CHEMICALS.
Other Precautions: PERSONS NOT SPECIFICALLY & PROPERLY TRAINED SHOULD NOT HNDL CHEM/ITS CNTNR. PROD IS FURNISHED FOR LAB USE ONLY! PRODS MAY NOT BE USED AS DRUGS, COSMETICS, AGRICULTURAL/PESTICIDAL PRODS, FOOD ADDITIVES/AS HOUSEHOLD CHEMS.

Control Measures

Respiratory Protection: USE NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N). USE APPROPRIATE OSHA/MSMA APPROVED SAFETY EQUIPMENT.
Ventilation: THIS CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
Protective Gloves: IMPERVIOUS GLOVES (FP N).
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: ANSI APPROVED EMERGENCY EYE WASH AND DELUGE SHOWER (FP N).
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: FIRST AID PROC: PATIENT IS HAVING DFCLTY BRTHG. IF PATIENT HAS STOPPED BRTHG ADMIN CPR. CONTINUE LIFE SUPPORTING MEASURES UNTIL MED ASSISTANCE HAS ARRIVED. INGEST: CALL MD IMMED (FP N).

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 06NOV95
Label Status: B
Common Name: PROPANOL, 0-233
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: FLAMMABLE. SLIGHTLY TOXIC. ACUTE: ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS-AVOID DIRECT PHYSICAL CONTACT! CAN BE HARMFUL IF INHALED, SWALLOWED, ABSORBED THROUGH SKIN. CAN CAUSE EYE AND

SKIN IRRITATION. DUST AND/OR VAPORS CAN CAUSE IRRITATION TO RESPIRATORY TRACT. CAN BE IRRITATING TO MUCOUS MEMBRANES. CHRONIC:NONE SPECIFIED BY MANUFACTURER.

Protect Eye: X

Protect Skin: X

Protect Respiratory: X

Label Name: CHEM SERVICE INC

Label P.O. Box: 3108

Label City: WEST CHESTER

Label State: PA

Label Zip Code: 19381

Label Country: US

Label Emergency Number: 215-692-3026

=====

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REAGENT PACK, VESSEL SOLUTION,
GENERATOR SOLUTION, NEUTRALIZING
SOLUTION

01-18-08775
SERAGEN, INC.
P.O. Box 1210
Indianapolis, IN 46206 U.S.A.
(317) 266-2000

CAS# 110-86-1

720-20

MATERIAL SAFETY DATA SHEET

AQUATEST REAGENTS

Seragen Diagnostics firmly believes that safe use of laboratory reagents requires knowledge of the physical, chemical, and hazardous properties of the substances. Material Safety Data Sheets (MSDSs) are the primary vehicle for transmitting this detailed information.

In evaluating Seragen products, a number of guidelines are observed.

1. Most Seragen reagents are mixtures, not "pure" substances. Since minimal objective scientific information is available on the hazards of the mixtures, they are assumed to have the same hazards as the component parts.
2. An individual MSDS is prepared for each component determined to be a health hazard and which comprises 1% or greater of the mixture. For chemicals identified as carcinogens, a MSDS is prepared if the concentration is 0.1% or greater.
3. An individual MSDS is prepared for each component which has been determined to present a physical hazard.
4. MSDSs are prepared in accordance with the rules presented in Hazard Communication: Final Rule, 29 CFR Part 1910, Department of Labor, Occupational Safety and Health Administration, November 25, 1983.
5. For AQUATEST REAGENTS individual MSDSs are provided as follows:

	<u>PYRIDINE</u>	<u>PYRIDINE FREE</u>
<u>Vessel Solution</u>	Part A- Pyridine, Sulfur Dioxide Part B- Methanol, Karl Fischer Reagent (Pyridine, Ethylene Glycol Monomethyl Ether, Sulfur Dioxide, Iodine)	Methanol Chloroform Sulfur Dioxide Iodine
<u>Generator Solution</u>	Methanol, Karl Fischer Reagent	2-Methoxyethanol Iodine Sulfur Dioxide
<u>Neutralizing Solution</u>	Methanol	Not Applicable
H7972-6 2712202		
H7972-5 2712201		
H7972-8 2712204		

SERAGEN DIAGNOSTICS
P.O. Box 1210
Indianapolis, IN 46206 USA

MATERIAL SAFETY DATA SHEET

SECTION I IDENTIFICATION OF PRODUCT

Chemical Name PYRIDINE	Formula C_5H_5N
Synonym or Cross Reference AZINE, AZABENZENE	CAS Number 110-86-1

SECTION II HAZARDOUS INGREDIENTS

Material PYRIDINE	Nature of Hazard FLAMMABLE, TOXIC
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SECTION III PHYSICAL DATA

Boiling Point 239°F (115°C)	Melting Point -41°C
Vapor Pressure (mm Hg) 760	Specific Gravity 1.0
Vapor Density (Air = 1) 2.7	Percent Volatile By Volume (%) N/A
Water Solubility YES	Evaporation Rate (NA =)

Appearance
COLORLESS LIQUID WITH SHARP, PENETRATING AND NAUSEOUS ODOR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (closed cup) 68°F	Flammable Limits	Lower 1.8	Upper 12.4
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Fire Extinguishing Media
ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE

Special Fire Fighting Procedures
WEAR SELF-CONTAINED BREATHING APPARATUS

Unusual Fire and Explosion Hazards
VAPOR IS HEAVIER THAN AIR AND MAY TRAVEL CONSIDERABLE DISTANCE TO A SOURCE OF
IGNITION

SECTION V HEALTH HAZARD DATA

Threshold Limit Value
5 ppm

Effects of Overexposure
TOXIC BY INHALATION AND INGESTION

First Aid Procedures

SKIN: WASH WITH STRONG SOAP IMMEDIATELY. RINSE THOROUGHLY

PYRIDINE (Cont'd)

SECTION VI REACTIVITY DATA

Stability	Unstable	Conditions to Avoid
	Stable X	N/A

Incompatibility (material to avoid)
ACIDS; POWERFUL OXIDIZING MATERIALS

Hazardous Decomposition Products
N/A

Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur X	N/A

SECTION VII SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled

COVER WITH SAND, SODA ASH MIXTURE.

Waste Disposal Method
INCINERATE OR LAND FILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (specify type)
WEAR SELF CONTAINED BREATHING APPARATUS

Ventilation	Local Exhaust	Special
	YES	N/A
	Mechanical (general)	Other
	YES	N/A

Protective Gloves RUBBER

Eye Protection
CHEMICAL SAFETY GOGGLES

Other Protective Equipment
N/A

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing
OUTSIDE OR DETACHED STORAGE IS PREFERABLE. INSIDE STORAGE SHOULD BE IN A STANDARD
FLAMMABLE LIQUID STORAGE ROOM OR CABINET.

Other Precautions
N/A

Prepared By

Revision Date 3/20/85



Michael J. Sullivan
Manager of Regulatory Affairs
(7) 266-2080

PORTS MSDS #: 348

PRODUCT: STANDARD, SELENIUM 1000PPM IN 10% NITRIC

PART NUMBER:

FORMULA: Se

KEYWORD: STANDARD

PORTS NUMBER: 00190042-100

PORTS MISC INFO:

LAB MSDS# 812

PORTS RATING: HFR=300

MANUFACTURER:

VHG LABS INC.

180 ZACHARY RD #5

MANCHESTER

NH

03109

PHONE: 603-622-7660

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . . ~ 212 F

NOTE: ~100'C.

Melting Point. . . . ~ 32 F

NOTE: ~0'C.

Freezing Point. . . . NG

Pour Point. . . . NG

Softening Point. . . NG

Specific Gravity . . ~ 1

Vapor Pressure . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Vapor Density. . . . NA

NOTE: NOT APPLI/NOT AVAIL.

Percent Volatiles. . ~ 99

NOTE: @ 21'C.

Evaporation Rate . . NA

NOTE: NOT APPLI/NOT AVAIL.

pH NA

NOTE: NOT APPLI/NOT AVAIL.

Molecular Weight . . EQ 78.96

NOTE: FORMULA WT.

Viscosity. NG

Solubility in Water. COMPLETE (100%).

Odor/Appearance/Other Characteristics:

COLORLESS LIQUID, ODORLESS / ODOR THRESHOLD: NOT APPLICABLE/NOT AVAILABLE.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . NA

NOTE: NOT APPLI/NOT AVAIL.

Flash Point, Open Cup . . . NG

Fire Point. NG

Auto Ignition. NA

NOTE: NOT APPLI/NOT AVAIL.

Explosive/Flammable Limits

Lower (LEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Upper (UEL). NA

NOTE: NOT APPLI/NOT AVAIL.

Shipping Regulations

UN/NA Number. NG

D.O.T. Hazard Class. . . NG

Label NOT GIVEN

Proper Shipping Name . . CHEMICALS, N.O.S. (NON-REGULATED)

Preparer/Contact Information: QUALITY ASSURANCE DEPARTMENT

Date Prepared/Revised 2/01/93

==== Component Information =====

SELENIUM

OSHA PEL (PPM):
OSHA PEL (MG/M3): 0.2
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 0.2
STEL (PPM): NG
STEL (MG/M3):
Product %: EQ 1.0
C.A.S. No.: 7782492

NITRIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 5
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 5
STEL (PPM):
STEL (MG/M3): 10
Product %: EQ 10
C.A.S. No.: 7697372

Note:

PEL & TLV: 2 PPM / STEL: 4 PPM.

WATER

OSHA PEL (PPM): NE
OSHA PEL (MG/M3):
ACGIH TLV (PPM): NE
ACGIH TLV (MG/M3):
STEL (PPM): NG
STEL (MG/M3):
Product %: BA
C.A.S. No.: 7732185

Note:

NE = NOT ESTABLISHED / BA = BALANCE.

==== SECTION I - PRODUCT IDENTIFICATION =====

PRODUCT NAME: Selenium Plasma Emission Standard - 10,000 micrograms/ml

COMMON SYNONYMS: N/A

CHEMICAL FAMILY: Plasma Emission Standards

FORMULA: Se

FORMULA WT.: 78.96

CAS NO.: N/A

NIOSH/RTECS NO.: QU5775000

PRODUCT USE: Laboratory Reagent

REVISION DATE: 02/01/93

TEL: (603) 622-7660

FAX: 622-5180

MANUFACTURER'S NAME AND ADDRESS:

VHG LABS, INC.
CHEMICAL PRODUCTS AND SERVICES

180 ZACHARY ROAD #5
MANCHESTER, NH 03109

===== SECTION II - COMPONENTS =====

SEE COMPONENT INFORMATION.

===== SECTION III - PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

ODOR THRESHOLD (PPM): N/A

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

===== SECTION IV - FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:

UPPER: N/A

LOWER: N/A

FIRE EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

UNUSUAL FIRE & EXPLOSION HAZARDS: Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

TOXIC GASES PRODUCED: Oxides of nitrogen.

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT: None identified.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE: None identified.

===== SECTION V - HEALTH HAZARD DATA =====

THRESHOLD LIMIT VALUE (TLV/TWA): 5 mg/m3 (2 ppm)

TLV is for Nitric acid.

SHORT-TERM EXPOSURE LIMIT (STEL): 10 mg/m3 (4 ppm)

STEL is for Nitric acid.

PERMISSIBLE EXPOSURE LIMIT (PEL): 5 mg/m3 (2 ppm)

PEL is for Nitric acid.

TOXICITY OF COMPONENTS:

ORAL RAT LD50 FOR SELENIUM: 6700 mg/kg

INTRAVENOUS RAT LD50 FOR SELENIUM: 6 mg/kg

INHALATION-1HR RAT LC50 FOR NITRIC ACID: 2500 ppm

INTRAPERITONEAL MOUSE LD50 FOR WATER: 190 g/kg

INTRAVENOUS MOUSE LD50 FOR WATER: 25 g/kg

CARCINOGENICITY: NTP: No IARC: No Z LIST: No OSHA REG: No

CARCINOGENICITY: None identified

REPRODUCTIVE EFFECTS: None identified

EFFECTS OF OVEREXPOSURE:

INHALATION: Headache, nausea, vomiting, dizziness, irritation of respiratory system

SKIN CONTACT: Severe irritation

EYE CONTACT: Severe irritation

SKIN ABSORPTION: None identified

INGESTION: Burns to mouth, throat, and stomach, kidney dysfunction

CHRONIC EFFECTS: None identified

TARGET ORGANS: Respiratory system, eyes, skin, teeth

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Damaged skin, eye disorders, cardiopulmonary disease

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, skin contact, eye contact

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting if conscious, give water, milk, or milk of magnesia.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

EYE CONTACT: In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

SARA/TITLE III HAZARD CATEGORIES AND LISTS:

ACUTE: Yes CHRONIC: Yes FLAMMABILITY: No PRESSURE: No REACTIVITY: No

EXTREMELY HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: Yes Contains Nitric Acid (RQ = 1,000 LBS)

SARA 313 TOXIC CHEMICALS: Yes Contains Nitric Acid

TSCA INVENTORY: Yes

===== SECTION VI - REACTIVITY DATA =====

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Heat

INCOMPATIBLES: Strong bases, strong reducing agents, alkalies, most common

metals

RECOMPOSITION PRODUCTS: Oxides of nitrogen

===== SECTION VII - SPILL & DISPOSAL PROCEDURES =====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

DISPOSAL PROCEDURE: Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA HAZARDOUS WASTE NUMBER: D002 (Corrosive Waste)

===== SECTION VIII - PROTECTION INFORMATION =====

EYE/FACE PROTECTION: Goggles & Shield

PROTECTIVE CLOTHING: Lab Coat & Apron

PROTECTIVE GLOVES: Rubber

VENTILATION REQUIREMENTS: Vent Hood

===== SECTION IX - STORAGE DATA AND ADDITIONAL INFORMATION =====

STORAGE REQUIREMENTS: Keep container tightly closed. Store in secure poison area. Isolate from incompatible materials.

===== SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION =====

DOMESTIC (D.O.T.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

INTERNATIONAL (I.M.O.):

PROPER SHIPPING NAME: Chemicals, n.o.s. (non-regulated)

MARINE POLLUTANTS: No

N/A = Not Applicable or Not Available

N/E = Not Established

The information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, VHG cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. VHG warrants that the chemical meets the specifications set forth on the label.

VHG DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION.

Approved by Quality Assurance Department.

FOSECO -- NAPAC - ~~S~~**SODIUM METAL** (NATRIUM)
MATERIAL SAFETY DATA SHEET
NSN: 681000F025680
Manufacturer's CAGE: 2W462
Part No. Indicator: A
Part Number/Trade Name: NAPAC

General Information

Item Name: SODIUM METAL (NATRIUM)
Company's Name: FOSECO INC
Company's Street: 20200 SHELDON RD
Company's City: BROOK PARK
Company's State: OH
Company's Country: US
Company's Zip Code: 44142-1315
Company's Emerg Ph #: 216-826-4548
Company's Info Ph #: 216-826-4548
Distributor/Vendor # 1: INDUSTRIAL & FOUNDRY SUPPLY CO
Distributor/Vendor # 1 Cage: 6L984
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 20MAR90
Safety Data Review Date: 09DEC92
MSDS Preparer's Name: TREVOR HARDY
Preparer's Company: FOSECO INC
Preparer's St Or P. O. Box: 20200 SHELDON RD
Preparer's City: BROOK PARK
Preparer's State: OH
Preparer's Zip Code: 44142-1315
MSDS Serial Number: BPSNG

Ingredients/Identity Information

Proprietary: NO
Ingredient: SODIUM METAL (NATRIUM)
Ingredient Sequence Number: 01
Percent: 100%
NIOSH (RTECS) Number: VY0686000
CAS Number: 7440-23-5

Physical/Chemical Characteristics

Appearance And Odor: SILVER WHITE METAL, NO ODOR.
Boiling Point: 1637F

CAS# 7440-23-5
MSDS BPSNG
Sodium

Vapor Pressure (MM Hg/70 F): 1.2

Fire and Explosion Hazard Data

Extinguishing Media: SODA ASH/DRY SODIUM CHLORIDE/GRAPHITE. DON'T USE WATER/CO2/CALCIUM CHLORIDE/SODA ACID/CONVENTIONAL DRY POWDER.

Unusual Fire And Expl Hazrds: DANGEROUS WHEN EXPOSED TO HEAT/FLAME/BY CHEMICAL REACTION W/WATER/OXIDIZING AGENTS. HEATED SODIUM IS SPONTANEOUSLY FLAMMABLE. AUTOIGNITION TEMP: 239F.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): HEAT, OPEN FLAME, MOISTURE

Materials To Avoid: WATER, OXIDIZING MATERIALS, HALOGENS, ACIDS, & HALOGENATED HYDROCARBONS

Hazardous Decomp Products: IN USE AS SODIUM MODIFIER FOR ALUMINUM WILL EVOLVE SODIUM OXIDE, HYDROGEN, & HEAT

Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: NO

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: SKIN/EYES: THERMAL & CHEMICAL BURNS.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE

Emergency/First Aid Proc: SKIN: REMOVE ALL UNREACTED SODIUM. WASH IMMEDIATELY W/WATER. EYES: REMOVE ALL UNREACTED SODIUM. FLUSH IMMEDIATELY W/WATER FOR AT LEAST 15 MINS. SEE EYE DOCTOR. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: FOR DAMAGED CANS: PLACE IN AIR TIGHT METAL CONTAINER FILLED W/KEROSENE.

Waste Disposal Method: DISPOSE OF IN ACCORDANCE W/LOCAL, STATE, & FEDERAL REGULATIONS. THIS IS A HAZARDOUS MATERIAL. FLAMMABLE SOLID.

Precautions-Handling/Storing: STORE IN COOL, DRY, FIRE-PROOF AREA AWAY FROM OPEN FLAMES, HEAT, & WATER OR WATER VAPOR.

Control Measures

Respiratory Protection: NONE REQUIRED IN NORMAL USE.
Protective Gloves: INSULATING
Eye Protection: SAFETY GLASSES
Suppl. Safety & Health Data: THE SODIUM METAL IS SUPPLIED IN A VACUUM
PACKED ALUMINUM CAN WHICH IS SAFE TO HANDLE PROVIDING THE CAN IS KEPT IN
TACT.

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Transportation Data

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Disposal Data

=====

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Label Data

=====

Label Required: YES
Technical Review Date: 09DEC92
Label Date: 19NOV92
Label Status: F
Common Name: NAPAC SODIUM METAL (NATRIUM)
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-Slight: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: SKIN/EYES: THERMAL & CHEMICAL BURNS. TARGET
ORGANS: LIVER, KIDNEY, CENTRAL NERVOUS SYSTEM, & LUNGS.
Protect Eye: Y
Protect Skin: Y
Label Name: FOSECO INC
Label Street: 20200 SHELDON RD
Label City: BROOK PARK
Label State: OH
Label Zip Code: 44142-1315
Label Country: US
Label Emergency Number: 216-826-4548
Year Procured: UNK

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delete information in this archive please sent updates to dan@siri.org.

===== STORAGE AND DISPOSAL =====

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE: STORE IN A COOL, DRY, WELL-VENTILATED LOCATION. SEPARATE FROM ACIDS, WATER, METALS. IMMEDIATELY REMOVE AND PROPERLY DISPOSE OF ANY SPILLED MATERIAL. (NFPA 49, HAZARDOUS CHEMICALS DATA, 1991)

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL: DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.

100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

CONDITIONS TO AVOID: MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

===== SPILL AND LEAK PROCEDURES =====

SOIL SPILL: DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

USE PROTECTIVE COVER SUCH AS A PLASTIC SHEET TO PREVENT MATERIAL FROM DISSOLVING IN FIRE EXTINGUISHING WATER OR RAIN.

WATER SPILL: ADD SUITABLE AGENT TO NEUTRALIZED SPILLED MATERIAL TO PH-7.

OCCUPATIONAL SPILL: DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS, WITH CLEAN SHOVEL PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER. MOVE CONTAINERS FROM SPILL AREA. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 1000 POUNDS

THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

===== PROTECTIVE EQUIPMENT =====

VENTILATION: PROVIDE LOCAL EXHAUST VENTILATION SYSTEM TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR: THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

SODIUM HYDROXIDE:

50 MG/M3: ANY POWERED AIR-PURIFYING RESPIRATOR WITH A DUST AND MIST

FILTER. ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

100 MG/M3: ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE. ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE. ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH EFFICIENCY PARTICULATE FILTER.

250 MG/M3: ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE: ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH EFFICIENCY PARTICULATE FILTER. ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OF HEALTH CONDITIONS: ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

===== SPECIAL NOTES =====

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CREATION DATE: 12/17/84

REVISION DATE: 07/14/93

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MSDS for SULFAMIC ACID / Page . 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: SULFAMIC ACID
FORMULA: $\text{NH}_2\text{SO}_3\text{H}$
FORMULA WT: 97.09
CAS NO.: 05329-14-6
NIOSH/RTECS NO.: W05950000
COMMON SYNONYMS: AMIDOSULFONIC ACID; AMIDOSULFURIC ACID; SULFAMIDIC ACID;
SULPHAMIC ACID
PRODUCT CODES: 4975,V145,4898,V147
EFFECTIVE: 11/26/86
REVISION #03

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 2 MODERATE
FLAMMABILITY - 0 NONE
REACTIVITY - 2 MODERATE
CONTACT - 3 SEVERE (CORROSIVE)

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

WARNING
CAUSES BURNS
HARMFUL IF SWALLOWED

DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID BREATHING DUST. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE
VENTILATION. WASH THOROUGHLY AFTER HANDLING.

SAF-T-DATA(TM) STORAGE COLOR CODE: WHITE (CORROSIVE)

2 - HAZARDOUS COMPONENTS

CAS# 05329-14-6
Sulfamic Acid

COMPONENT

%

CAS NO.

SULFAMIC ACID

90-100 5329-14-6

3 - PHYSICAL DATA

BOILING POINT: N/A

VAPOR PRESSURE(MM HG): N/A

MELTING POINT: 205 C (401 F) DECOMPOSES VAPOR DENSITY(AIR=1): 3.3

MSDS for SULFAMIC ACIDPage 2
-----SPECIFIC GRAVITY: 2.11
(H2O=1)EVAPORATION RATE: N/A
(BUTYL ACETATE=1)

SOLUBILITY(H2O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: 0

APPEARANCE & ODOR: WHITE, ODORLESS CRYSTALS.
-----4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED
BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.
MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER
TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE.
NOTE: DECOMPOSES AT MELTING POINT.

TOXIC GASES PRODUCED

AMMONIA, SULFUR DIOXIDE, NITROGEN OXIDES

5 - HEALTH HAZARD DATA

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

DUST MAY IRRITATE NOSE AND THROAT.

DUST MAY IRRITATE SKIN OR EYES.

CONTACT WITH SKIN OR EYES MAY CAUSE SEVERE IRRITATION OR BURNS.

INGESTION MAY CAUSE GASTROINTESTINAL PAIN.

TARGET ORGANS

EYES, SKIN

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

NONE IDENTIFIED

ROUTES OF ENTRY

EYE CONTACT, SKIN CONTACT, INGESTION, INHALATION

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.

MSDS for SULFAMIC ACID

Page 3

IF SWALLOWED, IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL

RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT

LEAST 15 MINUTES. FLUSH SKIN WITH WATER.

6 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBLES:

CHLORINE AND CHLORINE COMPOUNDS, NITRITES, NITRATES,
CARBONATES, METAL OXIDES, CHEMICALLY ACTIVE METALS,

STRONG BASES

DECOMPOSITION PRODUCTS: AMMONIA, OXIDES OF SULFUR, OXIDES OF NITROGEN

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.

WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.

J. T. BAKER NEUTRASORB(R) OR NEUTRASOL(R) "LOW NA+" ACID NEUTRALIZERS ARE RECOMMENDED FOR SPILLS OF SOLUTIONS OF THIS PRODUCT.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: D002 (CORROSIVE WASTE)

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS HIGH, A DUST/MIST RESPIRATOR IS RECOMMENDED. IF CONCENTRATION EXCEEDS CAPACITY OF RESPIRATOR, A SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

EYE/SKIN PROTECTION: SAFETY GOGGLES, UNIFORM, APRON, RUBBER GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: WHITE (CORROSIVE)

MSDS for SULFAMIC ACID

Page 4

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN CORROSION-PROOF AREA.
ISOLATE FROM INCOMPATIBLE MATERIALS.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME	CORROSIVE SOLID, N.O.S. (SULFAMIC ACID)
HAZARD CLASS	CORROSIVE MATERIAL (SOLID)
UN/NA	UN1759
LABELS	CORROSIVE

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME	SULPHAMIC ACID
HAZARD CLASS	8
UN/NA	UN2967
LABELS	CORROSIVE

PORTS MSDS #: 5150

PRODUCT: SULFURIC ACID

PART NUMBER:

FORMULA: H2SO4

KEYWORD: ACID

PORTS NUMBER: 03-401-1075; 03-450-0110

PORTS MISC INFO:

01-01-1075

95-01-0120

PORTS RATING: HFR=302

MANUFACTURER:

ASARCO, INC.

180 MAIDEN LANE

NEW YORK

NY

10038

PHONE: 212-510-2000

EMERGENCY PHONE:

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	BT 529 538 F	NOTE: 276-281'C.
Melting Point. . . .	EQ -20 F	NOTE: @ 93.19%; -1'C @ 98%
Freezing Point. . . .	NG	
Pour Point.	NG	
Softening Point. . . .	NG	

Specific Gravity . . .	BT 1.835 1.844	
Vapor Pressure	EQ .005	NOTE: MMHG @ 20'C, 90%.
Vapor Density.	NA	NOTE: NOT APPLICABLE.
Percent Volatiles. . .	NG	
Evaporation Rate . . .	NA	NOTE: NOT APPLICABLE.
pH	EQ .9	NOTE: 1% SOLUTION.
Molecular Weight . . .	EQ 98.08	
Viscosity.	NG	
Solubility in Water.	COMPLETE.	

Odor/Appearance/Other Characteristics:

OILY, COLORLESS TO SLIGHTLY YELLOW, CLEAR-TURBID LIQ. / ODOR THRESH:~1 MG/M3.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NA	NOTE: NOT APPLICABLE.
Flash Point, Open Cup . . .	NA	NOTE: NOT APPLICABLE.
Fire Point.	NG	
Auto Ignition.	NA	NOTE: NOT APPLICABLE.
Explosive/Flammable Limits		
Lower (LEL).	NA	NOTE: NOT APPLICABLE.
Upper (UEL).	NA	NOTE: NOT APPLICABLE.

Shipping Regulations

UN/NA Number.	UN1830
D.O.T. Hazard Class. . .	CORROSIVE MATERIAL
Label	NOT GIVEN
Proper Shipping Name . .	NOT GIVEN

Preparer/Contact Information: SULFURIC ACID SALES DEPARTMENT, 800 433-2243

Date Prepared/Revised 12/08/94

==== Component Information =====

SULFURIC ACID

OSHA PEL (PPM):
OSHA PEL (MG/M3): 1.0
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 1.0
STEL (PPM): NG
STEL (MG/M3):
Product #: BT 93 99
C.A.S. No.: 7664939

===== A. PRODUCT/COMPANY IDENTIFICATION =====

PRODUCT NAME: SULFURIC ACID

TRADE NAME (COMMON NAME OR SYNONYM): Sulfuric Acid, Oil of Vitriol

CHEMICAL NAME: Sulfuric Acid

ASARCO PRODUCT CODE #: 1860

FORMULA: H2SO4

MOLECULAR WEIGHT: 98.08

14605

ISSUED DATE: 1/7/83

REVISED DATE: 12/8/94

PHONE: 212-510-2000

CONTACT:

GENERAL INFORMATION:

DEPARTMENT OF ENVIRONMENTAL SCIENCES:

DAY: 801-262-2459
NIGHT: 801-561-3044

FIRST AID INFORMATION - (MEDICAL DEPT.): 415-457-0383

TRANSPORTATION EMERGENCIES - CHEMTREC: 800-424-9300

MANUFACTURER'S NAME AND ADDRESS:

ASARCO INCORPORATED
180 MAIDEN LANE
NEW YORK, NEW YORK 10038

===== B. COMPOSITION/INFORMATION ON INGREDIENTS =====

SEE COMPONENT INFORMATION.

===== C. HAZARDS IDENTIFICATION =====

PRIMARY ROUTES OF ENTRY:

INGESTION: X
INHALATION: X
SKIN:

CARCINOGENICITY: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as carcinogenic to humans. This classification does not apply to sulfuric acid or sulfuric acid solutions.

WARNING: This product contains a chemical known to the state of California to cause cancer.

ACUTE OVEREXPOSURE (SYMPTOMS AND EFFECTS):

Inhalation of fumes or mists can cause irritation or corrosive burns to the upper respiratory system. Lung irritation and pulmonary edema can occur.

Ingestion can cause irritation and corrosive burns to throat, mouth, and stomach. Can be fatal if swallowed.

Causes severe burns or irritation on skin contact.

Liquid contact with the eyes can cause irritation, corneal burns, and blindness. Mist contact may irritate or burn.

CHRONIC OVEREXPOSURE (SYMPTOMS AND EFFECTS): Long term exposure to high levels of acid fumes may cause erosion of teeth followed by jaw necrosis, bronchial irritation, coughing, and bronchial pneumonia, or gastrointestinal disturbances.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED: Acute and chronic respiratory diseases.

===== D. FIRST AID MEASURES =====

INHALATION: Remove from exposure; place individual under care of a physician.

INGESTION: Drink large amounts of water (or milk, if available) to dilute the acid. DO NOT INDUCE VOMITING!

SKIN AND EYE: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing. GET PROMPT MEDICAL ATTENTION!

===== E. FIRE FIGHTING MEASURES =====

FLASH POINT: Not Applicable

AUTO IGNITION TEMPERATURE: Not Applicable

FLAMMABLE LIMITS IN AIR (% BY VOL.): Not Applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable and explosive hydrogen gas can be generated inside metal drums and storage tanks. Concentrated acid can ignite combustible materials on contact. Acid plus active metal can also form explosive concentrations of hydrogen.

FIRE EXTINGUISHING AGENTS RECOMMENDED: If involved in a fire, use water spray; avoid spraying water into containers. If only a small amount of combustibles is present, smother fire with dry chemical.

FIRE EXTINGUISHING AGENTS TO AVOID: Direct stream of water may cause spattering.

SPECIAL FIRE FIGHTING PRECAUTIONS: Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire. At high temperatures, sulfuric acid or sulfur trioxide mists can be released from vented or ruptured containers. If water is added to concentrated sulfuric acid, violent spattering can occur and considerable heat may be evolved.

===== F. RELEASE MEASURES =====

SPILLS OR LEAKS: Dilute small spills or leaks cautiously with plenty of water. Neutralize with alkali such as soda ash or lime. Adequate ventilation required for soda ash due to release of CO₂ gas. No smoking in spill area. Major spills must be handled by a predetermined plan. Diking with soda ash is recommended. Attempt to keep out of sewer.

===== G. HANDLING AND STORAGE =====

NORMAL HANDLING:

Do not get in eyes, on skin, or clothing. Do not breathe vapor or mists.

Use protective equipment as outlined in Section H.

Do not add water to acid. When diluting, always add acid to water cautiously and with agitation. Use with adequate ventilation.

STORAGE: Protect from physical damage. Store in cool, well-ventilated area away from combustibles and reactive chemicals. Keep out of sun and away from heat. Keep containers in upright position. No smoking in storage areas.

===== H. EXPOSURE CONTROLS/PERSONAL PROTECTION =====

ENGINEERING CONTROLS: Adequate ventilation to maintain mist below permissible exposure limits. Packaging, unloading areas, or open processing equipment may require mechanical ventilation.

PERSONAL HYGIENE: Avoid inhalation or ingestion. Practice good housekeeping and personal hygiene procedures. Wash thoroughly before eating or smoking. Do not wear contaminated clothing home.

SPECIAL PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS: Loosen closures carefully.

NFPA CLASSIFICATION: 3H, 0F, 2R, W/-
LABEL SIGNAL WORD: DANGER

RESPIRATORY PROTECTION: When airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is a negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dusts and mists having a TWA not less than 0.05 mg/cu.m.

EYES AND FACE: Chemical goggles or faceshield required.

OTHER CLOTHING AND EQUIPMENT: Rubber gloves and apron or equivalent required when handling sulfuric acid. Full protective clothing recommended when handling large quantities of sulfuric acid.

===== I. PHYSICAL/CHEMICAL PROPERTIES =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

MELTING POINT (DEGREES C): 93.19% at -29 C, 98% at -1C

VAPOR PRESSURE (MM HG): 95% = 0.0015 AT 35 C

===== J. STABILITY AND REACTIVITY =====

STABILITY: Stable

CONDITIONS TO AVOID: Not Applicable

INCOMPATIBILITY (MATERIALS TO AVOID): Sulfuric acid is not flammable but highly reactive and capable of igniting finely divided combustible materials

on contact. Reacts violently with water and organic materials with evolution of heat. Extremely hazardous in contact with many materials, particularly carbides, chlorates, fulminates, nitrates, picrates, powdered metals and other combustible materials. Attacks many metals releasing hydrogen. Examples of common inorganic chemicals that should be avoided include: sodium carbonate, sodium hydroxide, elemental sodium, potassium permanganate, ammonium hydroxide, and potassium chlorate. Common organic chemicals that have been reported as being incompatible with sulfuric acid include: ethylene glycol, aniline, and ethylene diamine.

HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur Trioxide Mist

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Not Applicable

===== K. TOXICOLOGICAL INFORMATION =====

LD50 (SPECIES, ROUTE):

SULFURIC ACID: 2140 mg/kg (rat, oral)

LC50 (SPECIES):

SULFURIC ACID: 510 mg/cu.m/2 hrs. (rat)

MUTAGENICITY: Not available

===== L. ECOLOGICAL =====

ECOTOXICITY: Not available

ENVIRONMENTAL FATE: Not available

===== M. DISPOSAL CONSIDERATIONS =====

WASTE DISPOSAL METHODS, (DISPOSER MUST COMPLY WITH FEDERAL, STATE, AND LOCAL DISPOSAL OR DISCHARGE LAWS): If hazardous under 40 CFR 261, Subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257.

EPA HAZARDOUS WASTE NUMBER: D002 (corrosive)

40 CFR 261:

RCRA STATUS OF UNUSED MATERIAL: If discarded in unaltered form, material should be tested to determine if it must be classified as a hazardous waste for disposal purposes. Under specific circumstances, application can be made to the EPA Administrator to have a particular waste designated non-hazardous.

===== N. TRANSPORT =====

DOT REGULATION AND ID (OR PIN) NUMBER: Sulfuric acid is regulated as a corrosive material with an identification number of UN1830.

===== O. REGULATORY INFORMATION =====

WHMIS CLASSIFICATION, SARA REGULATION AND OTHER INFORMATION:

WHMIS Classifies this material as Class C, D1A, and E.

TSCA STATUS: On TSCA Inventory

REGULATED UNDER SARA TITLE III:

SECT. 302: Sulfuric Acid
SECT. 311/312: Immediate and Delayed
SECT. 313 CHEMICALS: Sulfuric Acid

CERCLA REPORTABLE QUANTITY: 1000 pounds for Sulfuric Acid.

===== P. REFERENCES =====

PERMISSIBLE CONCENTRATION REFERENCES: OSHA regulations for airborne contaminants 29 CFR 1910.1000 and 1018; ACGIH Threshold Limit Values for Chemical Substances.

HAZARD INFORMATION REFERENCES:

DOCUMENTATION OF THE THRESHOLD LIMIT VALUES, 6th Ed., ACGIH
PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Vol. 2A, 3rd Rev. Ed.
HANDBOOK OF TOXIC AND HAZARDOUS CHEMICALS; Sittig, Marshall; 1981
NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, 10th Ed.
TOMES PLUS DATABASE; Micromedex, Inc. Vol. 17, 1993
DATATOX DATABASE; Spectrum Research, Inc., Version 2.0, 1992

GENERAL:

HANDBOOK OF CHEMISTRY AND PHYSICS, 57th Ed., 1967-77, Weast, R.C., Editor, CRC Inc.

===== Q. ADDITIONAL INFORMATION =====

INFORMATION (HAZARDS, FIRST AID, ETC.) IS ABBREVIATED. MORE INFORMATION IS CONTAINED IN REFERENCES FOUND IN SECTION P.

ADDITIONAL INFORMATION CONTACT:

ASARCO INCORPORATED
SULFURIC ACID SALES DEPARTMENT
P.O. BOX 5747
TUCSON, AZ 85703-0747
(800) 433-2243

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MSDS for TETRACHLOROETHYLENE

Page 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: TETRACHLOROETHYLENE
FORMULA: CL₂C:CCl₂
FORMULA WT: 165.83
CAS NO.: 00127-18-4 ✓
NIOSH/RTECS NO.: KX3850000
COMMON SYNONYMS: PERCHLOROETHYLENE; ETHYLENE TETRACHLORIDE; CARBON BICHLORIDE;
CARBON DICHLORIDE
PRODUCT CODES: 9218,9453,5380,9465
EFFECTIVE: 02/12/87
REVISION #03

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH	-	3	SEVERE (CANCER CAUSING)
FLAMMABILITY	-	0	NONE
REACTIVITY	-	0	NONE
CONTACT	-	3	SEVERE (LIFE)

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

DANGER

HARMFUL IF SWALLOWED OR INHALED

EXCEPTIONAL HEALTH AND CONTACT HAZARDS - READ MATERIAL SAFETY DATA SHEET

NOTE: REPORTED AS CAUSING CANCER IN LABORATORY ANIMALS. EXERCISE DUE CARE.

NOTE: THIS MATERIAL OR ITS VAPORS IN CONTACT WITH FLAMES OR HOT GLOWING SURFACES MAY FORM CORROSIVE ACID FUMES.

KEEP AWAY FROM HEAT, SPARKS, FLAME. DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE
VENTILATION. WASH THOROUGHLY AFTER HANDLING.

SAF-T-DATA(TM) STORAGE COLOR CODE: BLUE (HEALTH)

CAS# 00127-18-4
Tetrachloroethylene

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
TETRACHLOROETHYLENE	90-100	127-18-4

3 - PHYSICAL DATA

BOILING POINT: 121 C (250 F) VAPOR PRESSURE(MM HG): 13

MSDS for TETRACHLOROETHYLENE Page 2

MELTING POINT: -22 C (-8 F) VAPOR DENSITY(AIR=1): 5.8

SPECIFIC GRAVITY: 1.62 (H2O=1) EVAPORATION RATE: 2.80 (BUTYL ACETATE=1)

SOLUBILITY(H2O): NEGLIGIBLE (LESS THAN 0.1 %) % VOLATILES BY VOLUME: 100

APPEARANCE & ODOR: COLORLESS LIQUID WITH ETHER OR CHLOROFORM ODOR.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP N/A NFPA 704M RATING: 2-0-0

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE.

TOXIC GASES PRODUCED

HYDROGEN CHLORIDE, PHOSGENE, CARBON MONOXIDE, CARBON DIOXIDE

5 - HEALTH HAZARD DATA

ACCEPTABLE MAXIMUM PEAK ABOVE THE ACCEPTANCE CEILING CONCENTRATION FOR AN
EIGHT-HOUR SHIFT = 300 PPM FOR 5 MINUTES IN ANY 3 HOURS. (PEL) CEILING
= 200 PPM

THRESHOLD LIMIT VALUE (TLV/TWA): 335 MG/M3 (50 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 1340 MG/M3 (200 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): MG/M3 (100 PPM)

TOXICITY: LD50 (ORAL-RAT) (MG/KG) - 8850
LD50 (IPR-MOUSE) (MG/KG) - 4700

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

INHALATION OF VAPORS MAY CAUSE HEADACHE, NAUSEA, VOMITING, DIZZINESS,
DROWSINESS, IRRITATION OF RESPIRATORY TRACT, AND LOSS OF CONSCIOUSNESS.
LIQUID MAY BE IRRITATING TO SKIN AND EYES. PROLONGED SKIN CONTACT MAY
RESULT IN DERMATITIS. EYE CONTACT MAY RESULT IN TEMPORARY CORNEAL DAMAGE.

MSDS for TETRACHLOROETHYLENEPage 3

INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS,

CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE DAMAGE TO KIDNEYS, LIVER,
LUNGS, BLOOD, OR CENTRAL NERVOUS SYSTEM.

TARGET ORGANS

LIVER, KIDNEYS, EYES, UPPER RESPIRATORY SYSTEM, CENTRAL NERVOUS SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

NONE IDENTIFIED

ROUTES OF ENTRY

INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.

IF SWALLOWED, DO NOT INDUCE VOMITING.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. FLUSH SKIN WITH WATER.

SOME EXPERIMENTS WITH TEST ANIMALS INDICATED THAT THIS SUBSTANCE MAY BE ANTICIPATED TO BE A CARCINOGEN.

6 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, ALKALI METALS, ALUMINUM

DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE, PHOSGENE,
CARBON MONOXIDE, CARBON DIOXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.

STOP LEAK IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS.

TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH SPILL AREA WITH WATER.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: U210 (TOXIC WASTE)

8 - PROTECTIVE EQUIPMENT

MSDS for TETRACHLOROETHYLENE

Page 4

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET
TLV REQUIREMENTS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE
CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP
TO 50 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH
ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE
THIS LEVEL, A SELF-CONTAINED BREATHING APPARATUS
IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GOGGLES AND FACE SHIELD, UNIFORM,
PROTECTIVE SUIT, POLYVINYL ALCOHOL GLOVES ARE
RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: BLUE (HEALTH)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN SECURE POISON AREA.
STORE IN A COOL, WELL-VENTILATED AREA AWAY FROM SOURCES OF HEAT, FLAME, OR
IGNITION.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME	TETRACHLOROETHYLENE (AIR ONLY)
HAZARD CLASS	ORM-A
UN/NA	UN1897
LABELS	NONE
REPORTABLE QUANTITY	1 LBS.

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME	TETRACHLOROETHYLENE
HAZARD CLASS	6.1
UN/NA	UN1897
LABELS	HARMFUL - STOW AWAY FROM FOOD STUFFS

PORTS MSDS #: 5454

PRODUCT: TOLUENE

PART NUMBER:

FORMULA: C7H8

KEYWORD: SOLVENT

PORTS NUMBER: 03-420-5721

PORTS MISC INFO:
01-20-5721

PORTS RATING: HFR=341

MANUFACTURER:
BURDICK & JACKSON
1953 SOUTH HARVEY STREET
MUSKEGON
MI49442
PHONE: 616-726-3171
EMERGENCY PHONE: 616-726-3171

===== Physical/Chemical Characteristics =====

Boiling Point. . . . EQ 231.12 F	NOTE: 110.62'C.
Melting Point. . . . NG	
Freezing Point. . . . EQ -139.0 F	NOTE: -94.99'C.
Pour Point. . . . NG	
Softening Point. . . NG	
Specific Gravity . . . EQ .867	NOTE: @ 20'C.
Vapor Pressure . . . EQ 28.5	NOTE: MMHG @ 20'C.
Vapor Density. . . . EQ 3.2	
Percent Volatiles. . ~ 100	
Evaporation Rate . . ~ 2	NOTE: BUAC=1.
pH NG	
Molecular Weight . . EQ 92.14	
Viscosity. NG	
Solubility in Water. 0.074% @ 20'C.	
Odor/Appearance/Other Characteristics:	
CLEAR, COLORLESS LIQUID WITH A SWEET PUNGENT ODOR.	

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 36 F	NOTE: 2'C, TCC.
Flash Point, Open Cup . . . NG	
Fire Point. NG	
Auto Ignition. EQ 896 F	NOTE: 480'C.
Explosive/Flammable Limits	
Lower (LEL). EQ 1.2	
Upper (UEL). EQ 7.1	

Shipping Regulations

UN/NA Number. . . . UN1294
D.O.T. Hazard Class. . . FLAMMABLE LIQUID, 3
Label NOT GIVEN
Proper Shipping Name . . TOLUENE

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 12/01/93

===== Component Information =====

TOLUENE

OSHA PEL (PPM): 100
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 100
ACGIH TLV (MG/M3):
STEL (PPM): 150
STEL (MG/M3):
Product %: ~ 100
C.A.S. No.: 108883

Note:

OSHA, ACGIH & NIOSH STEL / NIOSH 10 HR TWA: 100 PPM / PEL CEIL: NOT LISTED.

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

PRODUCT: TOLUENE

CHEMICAL NAME: Toluene

CHEMICAL FAMILY: Aromatic Hydrocarbon

SYNONYMS: Toluol, Methylbenzene

DOT PROPER SHIPPING NAME: Toluene

DOT HAZARD CLASS: Flammable Liquid, Hazard Class 3, P.G. II

AS NUMBER: 108-88-3

REVISION DATE: December, 1993

REVISION NO: 1

INFORMATION/EMERGENCY TELEPHONE NUMBER: 616-726-3171

CHEMTREC TELEPHONE NUMBER: 800-424-9300

CANADIAN EMERGENCY TELEPHONE NUMBER: 613-996-6666

MANUFACTURER'S NAME AND ADDRESS:

BURDICK & JACKSON
1953 SOUTH HARVEY STREET
MUSKEGON, MI 49442 USA

===== PHYSICAL AND CHEMICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Not expected to occur.

CONDITIONS TO AVOID: Heat, sparks, open flame, open containers, and poor ventilation.

MATERIALS TO AVOID: Strong oxidizing agents and strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion can generate carbon monoxide and other toxic vapors.

===== FIRE AND EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Volatile and flammable.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical and foam.

SPECIAL FIRE FIGHTING PROCEDURES: Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers.

===== HAZARDOUS COMPONENTS =====

SEE COMPONENT INFORMATION.

===== HEALTH HAZARDS =====

OCCUPATIONAL EXPOSURE LIMITS:

OSHA:

TWA: 100 ppm
STEL: 150 ppm
CEILING: Not listed

ACGIH:

TLV-TWA: 100 ppm
TLV-STEL: 150 ppm

NIOSH:

10 HOUR TWA: 100 ppm
STEL: 150 ppm

CONCENTRATION IMMEDIATELY DANGEROUS TO HEALTH:

OSHA/NIOSH: 2,000 ppm

ODOR THRESHOLD:

NSC: 1 ppm
NIOSH: 10-15 ppm

CARCINOGENIC DATA: Toluene is not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH. RTEC reports mutagenic effects on humans and teratogenic effects on animals.

PRIMARY ROUTES OF ENTRY: Toluene may exert its effects through inhalation, skin absorption, and ingestion.

INDUSTRIAL EXPOSURE: ROUTE OF EXPOSURE/SIGNS AND SYMPTOMS:

INHALATION: Exposure can cause anesthesia, dizziness, nausea, and respiratory tract irritation.

EYE CONTACT: Liquid and high vapor concentration can cause irritation and possible corneal damage.

SKIN CONTACT: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

INGESTION: Causes irritation of the gastrointestinal tract and may cause

systemic effects from absorption.

EFFECTS OF OVEREXPOSURE: Toluene is a primary skin irritant and a central nervous system depressant. Acute poisoning affects the nervous system leading to coma. Chronic exposure depresses the bone marrow, but without the severe or fatal damage present in benzene poisoning. Liver enlargement is also possible. Deliberate concentration and inhalation can cause liver, kidney, and brain damage.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: Preclude from exposure those individuals with disease of eyes, liver and central nervous system, and those susceptible to dermatitis.

EMERGENCY FIRST AID:

INHALATION: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.

EYE CONTACT: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.

SKIN CONTACT: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.

INGESTION: Call local Poison Control Center for assistance. Contact physician immediately. ASPIRATION HAZARD - DO NOT INDUCE VOMITING.

==== SAFETY MEASURES AND EQUIPMENT =====

VENTILATION: Adequate ventilation is required to protect personnel from exposure to chemical vapors exceeding the PEL and to minimize fire hazards. The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.

RESPIRATORY: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).

EYES: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.

SKIN: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, viton or nitrile rubber offer acceptable chemical resistance. Individuals who are acutely and specifically sensitive to toluene may require additional protective equipment.

STORAGE: Toluene should be protected from temperature extremes and direct sunlight. Proper storage of Toluene must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, Toluene should be stored in an acceptably protected and secure flammable liquid storage room.

OTHER: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

==== SPILL AND DISPOSAL DATA =====

SPILL CONTROL: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory

notification requirements. CERCLA Reportable Quantity: 1,000 pounds.

WASTE DISPOSAL: Dispose of Toluene as an EPA hazardous waste. Contact state environmental agency for listing of licensed hazardous waste disposal facilities and applicable regulations. Hazardous waste number: U220 (toxic); F005 (toxic, ignitable).

HAZARD CLASSIFICATION:

IMMEDIATE HEALTH: Yes (Irritant)
DELAYED HEALTH: Yes
FIRE: Yes
SUDDEN RELEASE: No
REACTIVE: No

CHEMICAL LISTINGS:

EXTREMELY HAZARDOUS SUBSTANCES: No
CERCLA HAZARDOUS SUBSTANCES: Yes
TOXIC CHEMICALS: Yes

Toluene is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372. This product does not contain any other toxic chemical above 1% concentration or a carcinogen above 0.1% concentration.

KEY:

ca	Approximately	STEL	Short Term Exposure Level (15 minutes)
na	Not Applicable	TLV	Threshold Limit Value
C	Ceiling	TWA	Time Weighted Average
		BuAc	Butyl Acetate

CERCLA Comprehensive Environmental Response, Compensation and Liability Act of 1980

NSC National Safety Council ("Fundamentals of Industrial Hygiene, "3rd Ed., 1988)

===== SPECIAL NOTES =====

BURDICK & JACKSON'S DISCLAIMER: The information and recommendations presented in this Material Safety Data Sheet are based on sources believed to be reliable on the date hereof. Burdick & Jackson makes no representation on its completeness or accuracy. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties, either express or implied, of merchantability or fitness for a particular purpose or of any other nature are made with respect to the information provided in this Material Safety Data Sheet or to the product to which such information refers. Burdick & Jackson neither assumes nor authorizes any other person to assume for it, any other or additional liability or responsibility resulting from the use of, or reliance upon, this information.

MSDS BMQXG

HEWLETT PACKARD -- TONER (PRE-MIXED), 17278A
MATERIAL SAFETY DATA SHEET
SN: 685000N024529
Manufacturer's CAGE: 98220
Part No. Indicator: A
Part Number/Trade Name: TONER (PRE-MIXED), 17278A

General Information

Company's Name: HEWLETT PACKARD CO
Company's Street: 16399 W BERNARDO DR
Company's City: SAN DIEGO
Company's State: CA
Company's Country: US
Company's Zip Code: 92127-1899
Company's Emerg Ph #: 619-487-4100
Company's Info Ph #: 619-487-4100
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 29JUN89
Safety Data Review Date: 13FEB92
MSDS Serial Number: BMQXG
Hazard Characteristic Code: N/

Ingredients/Identity Information

Proprietary: NO
Ingredient: ISOPAR-G; (SOLVENT, ISOPAR-G (MFR CAS NO 64742-48-9))
Ingredient Sequence Number: 01
Percent: >97
NIOSH (RTECS) Number: 1000360IP
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Other Recommended Limit: 300 PPM (MFR)

Proprietary: NO
Ingredient: DYESTUFF; (POLYMER & DYE STUFF)
Ingredient Sequence Number: 02
Percent: <3
NIOSH (RTECS) Number: 1001201DS
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: BLACK LIQUID; FAINT PETROLEUM HYDROCARBON ODOR.
Boiling Point: 311F, 155C
Melting Point: <0F, <-18C
Vapor Pressure (MM Hg/70 F): <10 @ 25C
Vapor Density (Air=1): 5.0
Specific Gravity: <0F, <-18C
Evaporation Rate And Ref: 0.30 (BUTYL ACETATE = 1)
Solubility In Water: <0.1%

Fire and Explosion Hazard Data

Flash Point: 100F, 38C
Flash Point Method: TCC
Lower Explosive Limit: 0.8%
Upper Explosive Limit: 7%
Extinguishing Media: DRY CHEMICAL, CO₂, FOAM AND MIST. WATER MAY BE
INEFFECTIVE, BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIP
(FP N). WATER NOT RECOMMENDED AS EXTINGUISHING MEDIA AS IT SPREADS HYDROCARBON FIRES.
MINIMIZE BREATHING GASES, VAPORS & FUMES.
Unusual Fire And Explosion Hazards: NONE, HOWEVER, IT IS FLAMMABLE WHEN EXPOSED
TO A DIRECT FLAME OR EXCESSIVE TEMPERATURES.

Reactivity Data

Stability: YES
Hazard To Avoid (Stability): NOT APPLICABLE.
Materials To Avoid: STRONG OXIDANTS (LIQUID CHLORINE, CONC O₂, CHROMIC ACID).
Hazardous Decomp Products: NONE, HOWEVER, MOST PRODUCTS OF COMBUSTION ARE TOXIC.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: (ACUTE & CHRONIC) BRIEF PERIODS OF HIGH EXPOSURE CAN CAUSE DIZZINESS, IRRITATION OF MUCOUS MEMBRANES, AND DROWSINESS. CHRONIC EXPOSURE TO CONCENTRATIONS BELOW 300 PPM ARE NOT CURRENTLY BELIEVED TO PRODUCE LONG TERM ADVERSE EFFECTS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: EXCESSIVE EXPOSURE CAN CAUSE HEADACHE, NAUSEA, AND EYE IRRITATION. SEVERE EXPOSURE CAN CAUSE MILD DEPRESSION AND/ OR RESPIRATORY IRRITATION AND DIFFICULTY IN BREATHING. SKIN CONTACT CAN CAUSE DRYING AND CHAPPING. EYE CONTACT CAN CAUSE IRRITATION OF CONJUNCTIVA.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INGEST: GET MD IMMEDIATELY. DO NOT INDUCE VOMITING AS IT MAY ASPIRATE IN LUNGS AND CAUSE PNEUMONIA-LIKE DISORDERS. WASH THOROUGHLY WITH SOAP AND WATER. INHAL: REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O₂/ARTIFICIAL RESPIRATION) (FP N).

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EXTINGUISH IGNITION SOURCES, PROVIDE VENTILATION, SOAK UP WITH INERT ABSORBENT AND PLACE IN A FLAMMABLE WASTE CONTAINER. IN CERTAIN SITUATIONS, SPILL REPORTS MAY NEED TO BE SUBMITTED TO LOCAL AUTHORITIES.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: CONSULT FEDERAL, STATE AND LOCAL AUTHORITIES FOR APPROVED WASTE DISPOSAL METHOD. HAZARD CLASSIFICATION: FLAMMABLE LIQUID. ID NUMBER: UN#1993.
Precautions-Handling/Storing: KEEP CONTAINER CLOSED, AVOID HANDLING NEAR HEAT, STRONG LIGHTS, SPARKS, OPEN FLAMES, AND STRONG OXIDANT.
Other Precautions: AVOID BREATHING VAPORS AND PROLONGED OR REPEATED SKIN CONTACT.

Control Measures

Respiratory Protection: NONE WHEN USED IN WELL-VENTILATED AREAS ACCORDING TO DIRECTIONS. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation: MECHANICAL (GENERAL): GENERAL OFFICE VENTILATION.
Protective Gloves: NEOPRENE OR NITRILE GLOVES.
Eye Protection: CHEM WORK GOGG/FULL LENGTH FSHLD (FP N).
Other Protective Equipment: NO SPECIFIC REQUIREMENT WHEN USED ACCORDING TO DIRECTIONS.
Work Hygienic Practices: AVOID BREATHING VAPORS, AND AVOID PROLONGED OR REPEATED SKIN CONTACT.
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

Trans Data Review Date: 92128
DOT PSN Code: GJL
DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.

DOT Class: 3
DOT ID Number: UN1993
DOT Pack Group: III
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HIA
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
IMO Regulations Page Number: 3345
IMO UN Number: 1993
IMO UN Class: 3.3
IATA PSN Code: MCA
IATA UN ID Number: 1993
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MCA
AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
AFI Class: 3
AFI ID Number: UN1993
AFI Pack Group: III
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7

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Disposal Data

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Label Data

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Label Required: YES
Technical Review Date: 12FEB92
Label Date: 12FEB92
Label Status: G
Common Name: TONER (PRE-MIXED), 17278A
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Slight: X
Contact Hazard-Moderate: X
Fire Hazard-Moderate: X
Reactivity Hazard-None: X
Special Hazard Precautions: FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME. ACUTE: EYE CONTACT CAN CAUSE IRRITATION OF CONJUNCTIVA. SKIN CONTACT CAN CAUSE DRYING AND CHAPPING. EXCESSIVE EXPOSURE CAN CAUSE HEADACHE, NAUSEA, RESPIRATORY IRRITATION, DIZZINESS, DROWSINESS. CHRONIC: NONE SPECIFIED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: HEWLETT PACKARD CO
Label Street: 16399 W BERNARDO DR
Label City: SAN DIEGO
Label State: CA
Label Zip Code: 92127-1899
Label Country: US
Label Emergency Number: 619-487-4100

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URL for this msds <http://siri.org>. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 5335

PRODUCT: TRICHLOROETHYLENE

PART NUMBER:

FORMULA: CHCL=CCL2

KEYWORD: DEGREASER

PORTS NUMBER: NNN

PORTS MISC INFO:
95-20-7820

PORTS RATING: HFR=210

MANUFACTURER:
PPG INDUSTRIES, INC.
ONE PPG PLACE
PITTSBURGH
PA15272
PHONE: PHONE:
EMERGENCY PHONE: 304-843-1300

===== Physical/Chemical Characteristics =====

Boiling Point. . . .	BT 187 190 F	NOTE: 86-88'C @ 760 MM HG.
Melting Point. . . .	EQ -123.5 F	NOTE: -86.4'C.
Freezing Point. . . .	EQ -123.5 F	NOTE: -86.4'C.
Pour Point.	NG	
Softening Point. . . .	NG	
Specific Gravity . . .	EQ 1.465	NOTE: @ 20/20'C.
Vapor Pressure	EQ 57.8	NOTE: MM HG, @ 20'C.
Vapor Density.	EQ 4.54	
Percent Volatiles. . .	EQ 100	
Evaporation Rate . . .	EQ .28	NOTE: ETHYL ETHER=1.
pH	BT 6.7 7.5	
Molecular Weight . . .	NG	
Viscosity.	NG	
Solubility in Water. .	0.11% BY WEIGHT.	
Odor/Appearance/Other Characteristics:		
CLEAR, COLORLESS LIQUID WITH ETHER-LIKE ODOR / BULK		

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . .	NO	NOTE: NONE.
Flash Point, Open Cup . . .	NO	NOTE: NONE.
Fire Point.	NG	
Auto Ignition.	NG	
Explosive/Flammable Limits		
Lower (LEL).	EQ 7.8	NOTE: VOLUME.
Upper (UEL).	EQ 52	NOTE: VOLUME.

Shipping Regulations

UN/NA Number.	UN1710
D.O.T. Hazard Class. . .	6.1
Label	NOT GIVEN
Proper Shipping Name . .	TRICHLOROETHYLENE

=====

Preparer/Contact Information: R. KENNETH LEE, MANAGER, PRODUCT SAFETY

Date Prepared/Revised 5/31/94

===== Component Information =====

TRICHLOROETHYLENE

OSHA PEL (PPM): 50
OSHA PEL (MG/M3):
ACGIH TLV (PPM): 50
ACGIH TLV (MG/M3):
STEL (PPM): 200
STEL (MG/M3):
Product #: GT 99
C.A.S. No.: 79016

Note:

STABILIZED / OSHA STEL / ACGIH STEL: 100 PPM / PPG

===== IDENTIFICATION =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

TRADE NAME: TRICHLOROETHYLENE

CHEMICAL NAME/SYNONYMS: TRICHLOROETHENE, TRICHLORETHYLENE, TRICHLOR

CHEMICAL FAMILY: HALOGENATED HYDROCARBONS

MSDS NUMBER: 0085

EDITION: 013

CAS NUMBER: 000079 01 6

J.S. DOT HAZARD CLASS: 6.1 (HARMFUL - STOW AWAY FROM FOODSTUFFS)

SUBSIDIARY RISK: N/A

PACKING GROUP: III

REPORTABLE QUANTITY: 100 LBS/45.4 KG

MSDS NUMBER: 0085

EDITION: 013

* DO NOT SHIP LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS.

24-HOUR EMERGENCY ASSISTANCE: (304) 843-1300

MANUFACTURER'S NAME AND ADDRESS:

PPG INDUSTRIES, INC.
ONE PPG PLACE
PITTSBURGH, PA 15272

===== PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

HEAT OF SOLUTION: N/A

===== INGREDIENTS =====

SEE COMPONENT INFORMATION.

MATERIAL

TRICHLOROETHYLENE (STABILIZED)

NOTE: TESTED MIXTURE

===== FIRE/EXPLOSION HAZARD DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

EXTINGUISHING MEDIA: WATER, DRY CHEMICALS OR CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR NIOSH/MSHA-APPROVED PRESSURE-DEMAND, SELF-CONTAINED BREATHING APPARATUS FOR POSSIBLE EXPOSURE TO HYDROGEN CHLORIDE AND POSSIBLY TRACES OF PHOSGENE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: VAPORS CONCENTRATED IN A CONFINED OR POORLY VENTILATED AREA CAN BE IGNITED UPON CONTACT WITH A HIGH ENERGY SPARK, FLAME, OR HIGH INTENSITY SOURCE OF HEAT. THIS CAN OCCUR AT CONCENTRATIONS RANGING BETWEEN 7.8-52% BY VOL. DECOMPOSITION OR BURNING CAN PRODUCE HYDROGEN CHLORIDE OR POSSIBLY TRACES OF PHOSGENE.

===== HEALTH HAZARD DATA =====

TOXICITY DATA:

LC50 INHALATION: LCLO(RATS) - 8000 PPM/4 HOUR
LD50 DERMAL: NOT DETERMINED
SKIN/EYE IRRITATION: SEE EFFECTS OF OVEREXPOSURE SECTION
LD50 INGESTION: (RAT) - 4900-7000 MG/KG
FISH, LC50 (LETHAL CONCENTRATION): SEE EFFECTS OF OVEREXPOSURE SECTION

CLASSIFICATION:

INHALATION: SLIGHTLY TOXIC
SKIN: NOT DETERMINED
SKIN/EYE: SKIN-MILDLY IRRITATING/EYE-IRRITANT
INGESTION: SLIGHTLY TO MODERATELY TOXIC
AQUATIC: SEE EFFECTS OF OVEREXPOSURE SECTION

===== EFFECTS OF OVEREXPOSURE =====

IS CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN:

NTP: NO
IARC: NO
OSHA: NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN

PERMISSIBLE EXPOSURE LIMITS:

OSHA: 50 PPM, 8-HOUR TWA (TIME-WEIGHTED AVERAGE); 200 PPM, 15-MINUTE STEL (SHORT-TERM EXPOSURE LIMIT); 29 CFR 1910.1000, TABLE Z.2, REV. 3/1/89.

NOTE: THE 1971 LIMIT IS 100 PPM, 8-HOUR TWA.

ACGIH: 50 PPM, 8 HOUR TWA; 100 PPM, 15-MINUTE STEL.

PPG INTERNAL PERMISSIBLE EXPOSURE LIMIT: 50 PPM, 8-HOUR TWA.

EUTE:

INHALATION: TRICHLOROETHYLENE IS A CENTRAL NERVOUS SYSTEM DEPRESSANT WHICH CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, DIZZINESS, NAUSEA, HEADACHE, LOSS OF COORDINATION AND EQUILIBRIUM, POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE, UNCONSCIOUSNESS AND DEATH IN CONFINED OR POORLY VENTILATED AREAS. FATALITIES FOLLOWING SEVERE ACUTE EXPOSURE HAVE BEEN ATTRIBUTED TO VENTRICULAR FIBRILLATION RESULTING IN CARDIAC FAILURES.

EYE/SKIN: LIQUID SPLASHED IN THE EYE CAN RESULT IN DISCOMFORT, PAIN AND IRRITATION. PROLONGED OR REPEATED CONTACT WITH LIQUID ON THE SKIN CAN CAUSE IRRITATION AND DERMATITIS. THE PROBLEM MAY BE ACCENTUATED BY LIQUID BECOMING TRAPPED AGAINST THE SKIN BY CONTAMINATED CLOTHING AND SHOES, AND SKIN ABSORPTION CAN OCCUR.

INGESTION: SWALLOWING OF THIS MATERIAL MAY RESULT IN IRRITATION OF THE MOUTH AND GI TRACT ALONG WITH OTHER EFFECTS AS LISTED ABOVE FOR INHALATION. VOMITING AND SUBSEQUENT ASPIRATION INTO THE LUNGS MAY LEAD TO CHEMICAL PNEUMONIA AND PULMONARY EDEMA WHICH IS A POTENTIALLY FATAL CONDITION.

CHRONIC: PROLONGED EXPOSURE ABOVE THE OSHA PERMISSIBLE LIMITS MAY RESULT IN LIVER AND KIDNEY DAMAGE. TRICHLOROETHYLENE HAS BEEN EXTENSIVELY STUDIED FOR CHRONIC EFFECTS IN ANIMALS. WHILE THERE ARE STUDIES IN WHICH TUMORS WERE INDUCED IN MICE, THERE IS NO EVIDENCE THAT TRICHLOROETHYLENE POSES A CARCINOGENIC RISK TO HUMANS. TRICHLOROETHYLENE IS LISTED IN GROUP 3 BY IARC AND IS NOT LISTED BY NTP OR OSHA.

TOXICITY DATA:

AQUATIC DATA:

SHEEPSHEAD MINNOWS: 96-HOUR LC50 - 52 MG/L SLIGHTLY TOXIC
MYSID SHRIMP: 96-HOUR LC50 - 14 MG/L SLIGHTLY TOXIC
MARINE ALGA: 96-HOUR EC50 - 95 MG/L SLIGHTLY TOXIC

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

EYE OR SKIN CONTACT: FLUSH EYES AND SKIN WITH PLENTY OF WATER (SOAP AND WATER FOR SKIN) FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. IF IRRITATION OCCURS, CONSULT A PHYSICIAN. THOROUGHLY CLEAN

CONTAMINATED CLOTHING AND SHOES BEFORE REUSE OR DISCARD.

INGESTION:

IF CONSCIOUS: DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING.
TAKE IMMEDIATELY TO A HOSPITAL OR PHYSICIAN.

IF UNCONSCIOUS: OR IN CONVULSIONS, TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN (INCLUDES ANTIDOTES): ONLY ADMINISTER ADRENALINE AFTER CAREFUL CONSIDERATION FOLLOWING TRICHLOROETHYLENE OVEREXPOSURE. INCREASED SENSITIVITY OF THE HEART TO ADRENALINE MAY BE CAUSED BY OVEREXPOSURE TO TRICHLOROETHYLENE.

===== REACTIVITY DATA =====

STABILITY: STABLE.

CONDITIONS TO AVOID: AVOID OPEN FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

CONDITIONS TO AVOID: NONE.

INCOMPATIBILITY (MATERIALS TO AVOID): AVOID CONTAMINATION WITH CAUSTIC SODA, CAUSTIC POTASH OR OXIDIZING MATERIALS. SHOCK SENSITIVE COMPOUNDS MAY BE FORMED.

HAZARDOUS DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE AND POSSIBLY TRACES OF PHOSGENE.

===== SPILL OR LEAK PROCEDURES =====

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED: IMMEDIATELY EVACUATE THE AREA AND PROVIDE MAXIMUM VENTILATION. UNPROTECTED PERSONNEL SHOULD MOVE UPWIND OF SPILL. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN/EYE PROTECTION (SEE SPECIAL PROTECTION INFORMATION SECTION) SHOULD BE PERMITTED IN AREA. DIKE AREA TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIAL ON ADSORBENTS, SUCH AS SAWDUST OR VERMICULITE, AND SWEEP INTO CLOSED CONTAINERS FOR DISPOSAL. AFTER ALL VISIBLE TRACES, INCLUDING IGNITABLE VAPORS, HAVE BEEN REMOVED, THOROUGHLY WET VACUUM THE AREA. DO NOT FLUSH TO SEWER. IF AREA OF SPILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH, GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD: CONTAMINATED SAWDUST, VERMICULITE OR POROUS

SURFACE
MUST BE DISPOSED OF IN A PERMITTED HAZARDOUS WASTE MANAGEMENT
FACILITY.
COVERED LIQUIDS MAY BE REPROCESSED OR INCINERATED OR MUST BE
TREATED IN A
PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN
WHEN USING
OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO
PREVENT
ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE
CHEMICAL
MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR
ACT, THE
CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AS
WELL AS ANY
OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING
DISPOSAL.

===== SPECIAL PROTECTION INFORMATION =====

RESPIRATORY PROTECTION: USE A HALF OR FULL FACEPIECE ORGANIC VAPOR
CHEMICAL
CARTRIDGE OR CANISTER RESPIRATOR WHEN CONCENTRATIONS EXCEED THE
PERMISSIBLE
LIMITS. USE SELF-CONTAINED BREATHING APPARATUS (SCBA) OR FULL
FACEPIECE
AIRLINE RESPIRATOR WITH AUXILIARY SCBA OPERATED IN THE
PRESSURE-DEMAND MODE
FOR EMERGENCIES AND FOR ALL WORK PERFORMED IN STORAGE VESSELS,
POORLY
VENTILATED ROOMS, AND OTHER CONFINED AREAS. RESPIRATORS MUST BE
APPROVED BY
NIOSH/MSHA. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA AND
BY THE
MANUFACTURER MUST BE OBSERVED. RESPIRATORY PROTECTION PROGRAMS MUST
BE IN
ACCORDANCE WITH 29CFR 1910.134.

VENTILATION (TYPE): USE LOCAL EXHAUST OR DILUTION VENTILATION AS
APPROPRIATE
TO CONTROL EXPOSURES TO BELOW PERMISSIBLE LIMITS.

EYE PROTECTION: SPLASHPROOF GOGGLES

GLOVES: VITON(R), SILVER SHIELD(R), POLYVINYL ALCOHOL (DEGRADES IN
WATER).

OTHER PROTECTIVE EQUIPMENT: BOOTS, APRONS, OR CHEMICAL SUITS SHOULD
BE USED
WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE
CLOTHING AND USE
OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29 CFR 1910.132 AND 29 CFR
1910.133.

===== SPECIAL PRECAUTIONS =====

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORING:

DO NOT USE IN POORLY VENTILATED OR CONFINED SPACES WITHOUT PROPER
RESPIRATORY PROTECTION (SEE SPECIAL PROTECTION INFORMATION
SECTION).

TRICHLOROETHYLENE VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN
LOW
AREAS.

KEEP CONTAINER CLOSED WHEN NOT IN USE.

STORE ONLY IN CLOSED, PROPERLY LABELED CONTAINERS.

LIQUID OXYGEN OR OTHER STRONG OXIDANTS MAY FORM EXPLOSIVE MIXTURES WITH TRICHLOROETHYLENE:

THIS MATERIAL OR ITS VAPORS WHEN IN CONTACT WITH FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS CAN DECOMPOSE TO FORM HYDROGEN CHLORIDE GAS AND TRACES OF PHOSGENE..

AVOID CONTAMINATION OF WATER SUPPLIES. HANDLING, STORAGE AND USE PROCEDURES MUST BE CAREFULLY MONITORED TO AVOID SPILLS OR LEAKS. ANY SPILL OR LEAK HAS THE POTENTIAL TO CAUSE UNDERGROUND WATER CONTAMINATION WHICH MAY, IF SUFFICIENTLY SEVERE, RENDER A DRINKING WATER SOURCE UNFIT FOR HUMAN CONSUMPTION. CONTAMINATION THAT DOES OCCUR CANNOT BE EASILY CORRECTED.

A CHLORINATED SOLVENT USED AS A FLASHPOINT SUPPRESSANT MUST BE ADDED IN SUFFICIENT QUANTITY OR THE RESULTANT MIXTURE MAY HAVE A FLASHPOINT LOWER THAN THE FLAMMABLE COMPONENT.

DO NOT USE CUTTING OR WELDING TORCHES ON DRUMS THAT CONTAINED TRICHLORO-ETHYLENE UNLESS PROPERLY PURGED AND CLEANED.

DO NOT SHIP LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS. THE ONLY EXCEPTION IS TYPE 145 VAPOR DEGREASING GRADE.

OTHER PRECAUTIONS: DO NOT BREATHE VAPORS. HIGH VAPOR CONCENTRATIONS CAN CAUSE DIZZINESS, UNCONSCIOUSNESS OR DEATH. LONG-TERM OVEREXPOSURE MAY CAUSE LIVER/KIDNEY INJURY AND POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE.

USE ONLY WITH ADEQUATE VENTILATION. VENTILATION MUST BE SUFFICIENT TO LIMIT EMPLOYEE EXPOSURE TO TRICHLOR BELOW PERMISSIBLE EXPOSURE LIMITS. OBSERVANCE OF LOWER LIMITS IS ADVISABLE (OUTLINED IN EFFECTS OF OVEREXPOSURE SECTION). EYE IRRITATION, DIZZINESS AND/OR DRUNKENNESS ARE SIGNS OF OVEREXPOSURE.

AVOID CONTACT WITH EYES. WILL CAUSE IRRITATION AND PAIN.

AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OR DERMATITIS.

DO NOT SWALLOW. SWALLOWING MAY CAUSE INJURY OR DEATH.

DO NOT EAT, DRINK, OR SMOKE IN WORK AREAS.

COMMENTS:

TSCA: TRICHLOROETHYLENE IS ON THE TSCA INVENTORY UNDER CAS #79-01-6.

SARA TITLE III: A) 311/312 CATEGORIES - ACUTE AND CHRONIC, B) LISTED IN

SECTION 313 UNDER TRICHLOROETHYLENE, C) NOT LISTED AS AN "EXTREMELY HAZARDOUS SUBSTANCE" IN SECTION 302.

CERCLA: LISTED IN TABLE 302.4 OF 40 CFR PART 302 AS A HAZARDOUS SUBSTANCE WITH A REPORTABLE QUANTITY OF 100 POUNDS. RELEASES TO AIR, LAND OR WATER WHICH EXCEED THE RQ MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

RCRA: WASTE TRICHLOR AND CONTAMINATED SOILS/MATERIALS FROM SPILL CLEANUP AND U228 HAZARDOUS WASTE AS PER 40 CFR 261.33 AND MUST BE DISPOSED OF ACCORDINGLY UNDER RCRA. SEE 40 CFR 261.33(C) AND 261.7 (B) (3) FOR CLEANING REQUIREMENTS FOR EMPTY CONTAINERS.

CALIFORNIA PROP. 65: THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

NEW JERSEY RIGHT-TO-KNOW: ALSO CONTAINS BUTYLENE OXIDE (CAS NO. 106-88-7)

CANADIAN WHMIS: A) SENSITIZATION TO PRODUCT: NONE KNOWN, B) REPRODUCTIVE TOXICITY: NONE KNOWN, C) ODOR THRESHOLD: NOT KNOWN, D) PRODUCT USE: DEGREASING SOLVENT, E) REQUIRES POISON SYMBOL (CLASS D.1).

REVISIONS MADE TO 7/12/93, 12TH EDITION: DATE, EDITION, NOTE REGARDING ALUMINUM TRAILERS ADDED TO IDENTIFICATION SECTION AND HANDLING PRECAUTIONS (SPECIAL PRECAUTIONS SECTION), UPDATED PERMISSIBLE EXPOSURE LIMITS (EFFECTS OF OVEREXPOSURE SECTION).

A B DICK -- #4-4345,4-4347,4-4349;UNIVERSAL BLANKET WAS - LITHOGRAPHIC BLANDET-ROLL
MATERIAL SAFETY DATA SHEET

SN: 6850010096234

MSDS BGCZQ

Manufacturer's CAGE: 17638

Part No. Indicator: B

Part Number/Trade Name: #4-4345,4-4347,4-4349;UNIVERSAL BLANKET WAS

=====

General Information

=====

Item Name: LITHOGRAPHIC BLANDET-ROLLER WASH

Company's Name: A.B.DICK COMPANY

Company's Street: 5700 WEST TOUHY AVENUE

Company's City: CHICAGO

Company's State: IL

Company's Country: US

Company's Zip Code: 60648-4606

Company's Emerg Ph #: 312-763-1900

Company's Info Ph #: 312-763-1900

Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 002

Status: SM

Date MSDS Prepared: 06JUN89

Safety Data Review Date: 06MAY91

Supply Item Manager: CX

MSDS Preparer's Name: KENNETH W.PINTER

MSDS Serial Number: BGCZQ

Specification Number: O-L-298

Spec Type, Grade, Class: TYPE I

Hazard Characteristic Code: F4

Unit Of Issue: CN

Unit Of Issue Container Qty: 5.0 GL

Type Of Container: CAN

Net Unit Weight: 32.1 LBS

=====

Ingredients/Identity Information

=====

Proprietary: NO

Ingredient: PARAFFIN WAX

Ingredient Sequence Number: 01

Percent: 45.2

NIOSH (RTECS) Number: RV0350000

CAS Number: 8002-74-2

OSHA PEL: 2 MG/M3 (FUME)

ACGIH TLV: 2 MG/M3 (FUME); 9192

Proprietary: NO

Ingredient: NAPHTHALENE (SARA III)

Ingredient Sequence Number: 02

Percent: 47.2

NIOSH (RTECS) Number: QJ0525000

CAS Number: 91-20-3

OSHA PEL: 10 PPM/15 STEL

ACGIH TLV: 10 PPM/15 STEL; 9192

Proprietary: NO

Ingredient: NAPHTA (PETROLEUM SPIRITS OR BENZIN)

Ingredient Sequence Number: 03

Percent: 6.6

NIOSH (RTECS) Number: DE3030000

CAS Number: 8030-30-6

OSHA PEL: 100 PPM

ACGIH TLV: NOT ESTABLISHED

Proprietary: NO

Ingredient: OLEFINS

Ingredient Sequence Number: 04

Percent: 1.0

NIOSH (RTECS) Number: 10007950L

ACGIH TLV: UNKNOWN

 Proprietary: NO
 Ingredient: NAPHTHA, MEDIUM ALIPHATIC (SEE INGREDIENTS # 1,2,3,4 AND SUPP.
 HEALTH DATA)
 Ingredient Sequence Number: 05
 Percent: 100.0
 NIOSH (RTECS) Number: 1003692SN
 CAS Number: 64742-88-7
 OSHA PEL: NOT ESTABLISHED
 ACGIH TLV: NOT ESTABLISHED
 Other Recommended Limit: NONE SPECIFIED
 =====

Physical/Chemical Characteristics

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Appearance And Odor: WATER-WHITE LIQUID;SWEET NAPHTHA ODOR.
 Boiling Point: 305F,152C
 Vapor Pressure (MM Hg/70 F): 8
 Vapor Density (Air=1): 4.73
 Specific Gravity: 0.774
 Decomposition Temperature: UNKNOWN
 Evaporation Rate And Ref: N/A(EXPECT RAPID)
 Solubility In Water: NEGLIGIBLE
 Percent Volatiles By Volume: 100
 Corrosion Rate (IPY): UNKNOWN
 =====

Fire and Explosion Hazard Data

=====

Flash Point: 1F,-17C
 Flash Point Method: TCC
 Lower Explosive Limit: 1.1
 Upper Explosive Limit: 6.1
 Extinguishing Media: USE WATER FOG, CARBON DIOXIDE, FOAM, OR DRY CHEMICAL.
 Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A
 FULL FACED SELF CONTAINED BREATHING APPARATUS. EVACUATE AREA. COOL FIRE
 EXPOSED CONTAINERS WITH WATER SPRAY.
 Unusual Fire And Expl Hazrds: FORMS COMBUSTIBLE AND/OR EXPLOSIVE MIXTURE
 WITH AIR.AND/OR OXYGEN.HEAVIER THAN AIR;SEE SUPP DATA.
 =====

Reactivity Data

=====

Stability: YES
 Cond To Avoid (Stability): HIGH HEAT, OPEN FLAMES AND OTHER SOURCES OF
 IGNITION
 Materials To Avoid: NOTE LEL,UEL:FORMS COMBUSTIBLE,EXPLOSIVE MIX W AIR,
 OXYGEN
 Hazardous Decomp Products: NONE;COMBUSTION PRODUCTS. ARE CO*2,H*2O
 Hazardous Poly Occur: NO
 =====

Health Hazard Data

=====

Signs/Symptoms Of Overexp: EYE:IRRITNT;INHALE,SKIN ABSORB:INTOXICATION,
 NARCOSIS,NUCOUS MEMBRANE IRRITNT;INGEST:MAY BE FATAL.
 Emergency/First Aid Proc: INHALE:REMOVE TO FRESH AIR,GIVE CPR/O*2 IF
 NEED;EYES:FLUSH W LG AMTS H*2O FOR 15 MIN;SKIN:FLUSH W LG AMTS SOAP /H*2O;
 INGEST:DO NOT INDUCE VOMIT;CALL DR IMMEDIATELY FOR INGEST,INHALE,EYES.
 =====

Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: EVACUATE UNPROTECTED PERSONS.ELIM IGNITION
 SOURCES.STOP LEAK.H*2O SPARY COOL CONT/DIVERT SPILL FROM FIRE/HEAT.PROVIDE
 DIKE W COMMERCIAL ABSORBENT,PUMP INTO COVERED DRUMS.
 Waste Disposal Method: KEEP IN COVERED DRUMS,PENDING DISPOSAL.HANDLE &
 DISPOSE IN FULL REGS.COMPLIANCE.MFG SUGGESTS APPROVED INCINERATION.
 Precautions-Handling/Storing: STORE IN COOL,DRY,WELL VENTILATED,LOW FIRE
 RISK AREA.PROTECT FROM PHYSICAL DAMAGE.AVOID ANY PHYSICAL CONTACT.KEEP
 CONTAINERS TIGHTLY CLOSED.
 Other Precautions: AVOID PROLONGED OR REPEATED CONTACT W CHEMICAL.REMOVE &
 WASH CONTAMINATED CLOTHING.USE NON-SPARKING TOOLS.GROUND ALL CONTAINERS
 WHEN TRANSFERRING LIQUID.PROHIBIT OPEN FLAME.
 =====

Control Measures

Respiratory Protection: DO NOT INHALE VAPORS: IF EXPOSED, SELF CONTAINED/AIR PURIFYING APP.
Ventilation: MECHANICAL (GEN./LOCAL EXHAUST); FLOOR LEVEL EXHAUST W LG QTY.
Protective Gloves: IMPERVIOUS/RUBBER
Eye Protection: SAFETY/CHEM GOGGLES
Other Protective Equipment: NORMAL FULL WORK CLOTHING COVERING ARMS, LEGS.
Suppl. Safety & Health Data: MSDS DATED JULY 2, 1985 (MFGR USES ALIPHATIC HYDROCARBON (MIXED C*9 & C*10) IN THIS MSDS AS HAZARDOUS INGREDIENTS.
CAS#64742-88-7, 100%, TLV=500PPM, OF THE MIXTURE) MFR USES THIS PART# AFTER MAY, 1979.

Transportation Data

Trans Data Review Date: 91126
DOT PSN Code: GJL
DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
DOT Class: 3
DOT ID Number: UN1993
DOT Pack Group: III
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HIA
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
IMO Regulations Page Number: 3345
IMO UN Number: 1993
IMO UN Class: 3.3
IATA PSN Code: MCA
IATA UN ID Number: 1993
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MCA
AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.
AFI Class: 3
AFI ID Number: UN1993
AFI Pack Group: III
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7
Additional Trans Data: SEE PRECAUTIONS; P/N CHANGE OCCURS IN APRIL '79.
OLD ITEM UNDER P/N INDICATOR A.

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 06MAY91
Label Status: F
Common Name: #4-4345, 4-4347, 4-4349; UNIVERSAL BLANKET WASH
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-Moderate: X
Reactivity Hazard-None: X
Special Hazard Precautions: COMBUSTIBLE MATERIAL, MAY BE IGNITED BY HEAT, OPEN FLAMES OR SPARKS. MAY BE POISONOUS IF INHALED OR ABSORBED THROUGH SKIN. VAPORS CAUSE DIZZINESS OR SUFFOCATION. CONTACT MAY IRRITATE OR BURN SKIN AND EYES. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION. DO NOT TAKE INTERNALLY. DO NOT BREATHE VAPORS OR MIST. AVOID CONTACT WITH EYES AND SKIN. KEEP AWAY FROM HEAT, OPEN FLAMES AND SPARKS. FIRST AID: IF INGESTED OR INHALED, REMOVE TO FRESH AIR AND CONSULT A PHYSICIAN. FOR EYES AND SKIN, FLUSH WITH PLENTY OF WATER FOR ABOUT 15-20 MINUTES AND SEEK MEDICAL ATTENTION IMMEDIATELY IF IRRITATION PERSISTS
Protect Eye: Y
Protect Skin: Y

Protect Respiratory: Y
Label Name: A.B.DICK COMPANY
Label Street: 5700 WEST TOUHY AVENUE
Label City: CHICAGO
Label State: IL
Label Zip Code: 60648-4606
Label Country: US
Label Emergency Number: 312-763-1900

=====
URL for this msds <http://siri.org>. If you wish to change, add to, or
delete information in this archive please sent updates to dan@siri.org.

PORTS MSDS #: 892

PRODUCT: XYLENES

PART NUMBER:

FORMULA:

KEYWORD: ORGANIC

PORTS NUMBER: 660240511-10; 66-024-0511

PORTS MISC INFO:
NOT GIVEN

PORTS RATING: HFR=230

MANUFACTURER:

CHEM SERVICE
P.O. BOX 3108
WEST CHESTER
PA

19381

PHONE: 215-692-3026

EMERGENCY PHONE: 215-692-3026

===== Physical/Chemical Characteristics =====

Boiling Point. . . . BT 279 291 F
Melting Point. . . . NA
Freezing Point. . . . NG
Pour Point. . . . NG
Softening Point. . . NGNOTE: 137-144'C.
NOTE: NOT AVAILABLE.Specific Gravity . . EQ .860
Vapor Pressure . . . NA
Vapor Density. . . . NA
Percent Volatiles. . NG
Evaporation Rate . . NA
pH NG
Molecular Weight . . NG
Viscosity. NGNOTE: DENSITY.
NOTE: NOT AVAILABLE.
NOTE: NOT AVAILABLE.
NOTE: NOT AVAILABLE.Solubility in Water. INSOLUBLE (IMMISCIBLE).
Odor/Appearance/Other Characteristics:
COLORLESS LIQUID, AROMATIC ODOR.

===== Fire & Explosive Hazard Data =====

Flash Point, Closed Cup . . EQ 84 F
Flash Point, Open Cup . . . NG
Fire Point. NG
Auto Ignition. NG
Explosive/Flammable Limits
Lower (LEL). NO
Upper (UEL). NONOTE: 29'C.

NOTE: NONE.
NOTE: NONE.

Shipping Regulations

UN/NA Number. NG
D.O.T. Hazard Class. . . NG
Label NOT GIVEN
Proper Shipping Name . . NOT GIVEN

Preparer/Contact Information: NOT GIVEN

Date Prepared/Revised 1/07/93

==== Component Information =====

XYLENES

OSHA PEL (PPM):
OSHA PEL (MG/M3): 435
ACGIH TLV (PPM):
ACGIH TLV (MG/M3): 434
STEL (PPM): NG
STEL (MG/M3):
Product #: NG
C.A.S. No.: 1330207

Note:

MIXED / PEL & TLV: 100 PPM.

==== SECTION I PRODUCT SPECIFICATIONS =====

PRODUCT NAME: Xylenes (mixed)

CAT NO.: 0-2294

CAS NO.: 1330-20-7

08/11/94

LAST REVISED: January 7, 1993

EMERGENCY PHONE: 215-692-3026

SUPPLIED BY:

CHEM SERVICE, INC.
PO BOX 3108
WEST CHESTER, PA 19381
(215) 692-3026

==== SECTION II TOXICITY DATA =====

ORAL RAT OR MOUSE LD50	RTECS#	OSHA PEL (TWA)	ACGIH TLV (TWA)
4300mg/kg	ZE2100000	100 ppm(435 mg/m3)	100 ppm (434mg/m3)

This compound is considered to be slightly toxic.
This statement is based upon OSHA's assessment of the LD50

CARCINOGENICITY:

OSHA: NO
IARC: NO
NTP: NO
ACGIH: NO
NIOSH: NO
OTHER: YES

==== SECTION III PHYSICAL DATA =====

SEE PHYSICAL/CHEMICAL CHARACTERISTICS OR FIRE & EXPLOSIVE HAZARD DATA.

==== SECTION IV FIRE AND EXPLOSION HAZARD DATA =====

FLASH POINT: 29 C This is a flammable chemical.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical powder or spray.

No explosion limits are available for this compound.

==== SECTION V HEALTH HAZARD DATA =====

Contact lenses should not be worn in the laboratory.

All chemicals should be considered hazardous - Avoid direct physical contact!

Suspected Carcinogen-may produce cancer. May be harmful if absorbed through the skin.

May be harmful if inhaled. May be harmful if swallowed. Can cause eye irritation.

Can cause skin irritation. Dust and/or vapors can cause irritation to respiratory tract.

Can be irritating to mucous membranes. Narcotic at high concentrations.

May be fatal if swallowed! Chronic exposure may cause bronchitis.

Can cause nervous system injury. Exposure can cause liver damage.

Exposure can cause kidney damage. Can cause blood disorders.

May be rapidly absorbed thru the skin with potential adverse health effects.

Can cause an allergic skin reaction.

Prolonged exposure may cause nausea/headache/dizziness and/or eye damage.

Can cause gastro-intestinal disturbances. May be fatal if inhaled!

==== SECTION VI FIRST AID =====

An antidote is a substance intended to counteract the effect of a poison. It should be administered only by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

IN CASE OF CONTACT: Flush eyes continuously with water for 15-20 minutes. Flush skin with water for 15-20 minutes. If no burns have occurred - use soap and water to cleanse skin. If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathing. If patient is in cardiac arrest administer CPR.

Continue life supporting measures until medical assistance has arrived.

==== SECTION VII REACTIVITY DATA =====

Incompatible with strong oxidizing agents. Decomposition liberates toxic fumes. Flammable.

==== SECTION VIII SPILL OR LEAK PROCEDURES =====

SPILL OR LEAKS: Evacuate area. Wear appropriate OSHA regulated equipment. Ventilate area. Absorb on vermiculite or similar material. Sweep up and place in an appropriate container. Hold for disposal. Wash contaminated surfaces to remove any residues.

DISPOSAL: Burn in a chemicals incinerator equipped with an afterburner and scrubber.

==== SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING =====

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors. Keep tightly closed.

Store in a cool dry place. Store only with compatible chemicals.

===== SECTION X SPECIAL PRECAUTIONS AND COMMENTS =====

The above information is believed to be correct on the date it is published and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded MSDS must be made available to the employee within three months. Responsibility for updates lies with the employer and not with CHEM SERVICE, INC. Persons not specifically and properly trained should not handle this chemical or its container. This MSDS is provided without any warranty expressed or implied, including merchantability or fitness for any particular purpose.

This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticidal products, food additives or as household chemicals.